

ProtoNode FPC-N34 and ProtoNode FPC-N35 Start-up Guide

For Interfacing Weil-McLain Products:

Unity 1.0 Control, SlimFit 1000-2000 Series 1 (SF_SOLA)

To Building Automation Systems:

BACnet MS/TP, BACnet/IP, Modbus TCP/IP, Metasys N2 and LonWorks

APPLICABILITY & EFFECTIVITY

Explains ProtoNode hardware and how to install it.

The instructions are effective for the above as of October 2020.

Technical Support

Thank you for purchasing the ProtoNode for Weil-McLain.

Please call Weil-McLain for technical support of the ProtoNode product.

MSA Safety does not provide direct support. If Weil-McLain needs to escalate the concern, they will contact MSA Safety for assistance.

Support Contact Information:

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Michigan City IN
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Website: www.Weil-McLain.com

Quick Start Guide

1. Record the information about the unit. (**Section 3.1**)
2. Check that the ProtoNode and customer device COM settings match. (**Section 3.3**)
3. FPC-N34: Select the protocol configuration on the S Bank DIP switches. (**Section 3.4**)
4. BACnet MS/TP (FPC-N34): Set the MAC Address on the A Bank DIP switches. (**Section 3.5.1**)
5. BACnet MS/TP (FPC-N34): Set the baud rate of the BACnet MS/TP field protocol on the B Bank DIP switches. (**Section 3.5.2**)
6. Connect the ProtoNode 6 pin RS-485 connector to the RS-485 network that is connected to each of the devices. (**Section 4.2**)
7. **If using a serial field protocol:**
Connect the ProtoNode FPC-N34 3 pin RS-485 port to the field protocol cabling, (Section 4.3**)**
or connect the ProtoNode FPC-N35 2 pin LonWorks port to the field protocol cabling. (Section 4.4**)**
8. Connect power to the ProtoNode 6 pin port. (**Section 4.5**)

NOTE: If using Unity 1.0 with default BACnet MS/TP the unit is already preconfigured and steps 9-12 are unnecessary.

9. Connect a PC to the ProtoNode via Ethernet cable. (**Section 5**)
10. Setup Web Server Security and login via web browser. (**Section 6**)
11. Use a web browser to access the ProtoNode Web Configurator page to select the profiles of the devices attached to the ProtoNode and enter any necessary device information. Once the devices are selected, the ProtoNode automatically builds and loads the appropriate configuration. (**Section 7**)
12. Ethernet Network (FPC-N34): If using an Ethernet field protocol, use a web browser to access the ProtoNode Web Configurator page to change the IP Address. (**Section 7.6**)
13. LonWorks (FPC-N35): The ProtoNode must be commissioned on the LonWorks Network. This needs to be done by the LonWorks administrator using a LonWorks commissioning tool. (**Section 8**)

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1 CERTIFICATIONS

1.1 BTL Mark – BACnet¹ Testing Laboratory



BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to requirements of ASHRAE Standard 133 is the responsibility of the BACnet International. BTL is a registered trademark of the BACnet International.

The BTL Mark on ProtoNode is a symbol that indicates that a product has passed a series of rigorous tests conducted by an independent laboratory which verifies that the product correctly implements the BACnet features claimed in the listing. The mark is a symbol of a high-quality BACnet product.

Go to www.BACnetInternational.net for more information about the BACnet Testing Laboratory. Click [here](#) for the BACnet PIC Statement.

1.2 LonMark Certification



LonMark International is the recognized authority for certification, education, and promotion of interoperability standards for the benefit of manufacturers, integrators and end users. LonMark International has developed extensive product certification standards and tests to provide the integrator and user with confidence that products from multiple manufacturers utilizing LonMark devices work together. MSA Safety has more LonMark Certified gateways than any other gateway manufacturer, including the ProtoCessor, ProtoCarrier and ProtoNode for OEM applications and the full featured, configurable gateways.

¹ BACnet is a registered trademark of ASHRAE

2 INTRODUCTION

2.1 ProtoNode Gateway

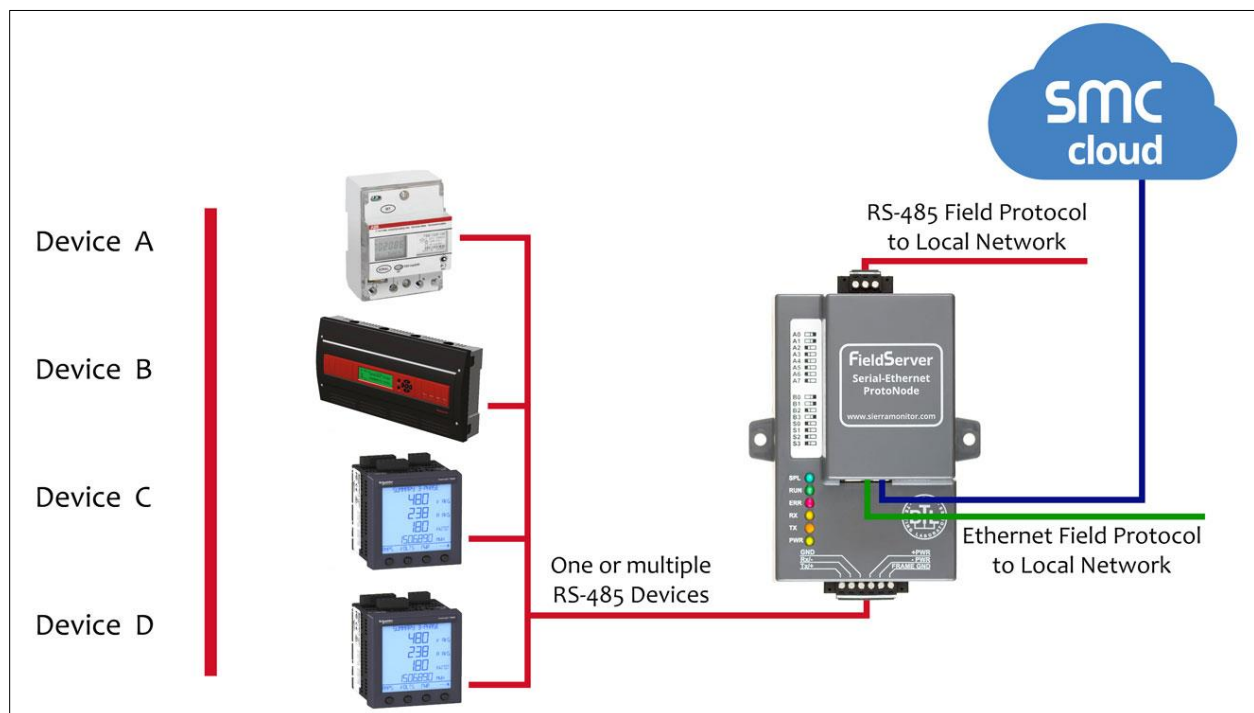
The ProtoNode is an external, high performance **building automation multi-protocol gateway** that is preconfigured to communicate between Weil-McLain's products (hereafter called "device") connected to the ProtoNode and configure them for BACnet MS/TP, BACnet/IP, Metasys^{®2} N2 by JCI, Modbus TCP/IP or LonWorks^{®3}.

It is not necessary to download any configuration files to support the required applications. The ProtoNode is pre-loaded with tested profiles/configurations for the supported devices.

NOTICE: The FPC-N34 for Weil-McLain products comes shipped with the Unity 1.0 profile already set as an active profile with the default settings to match the Unity 1.0 control and set for BACnet MS/TP. If different or additional profile settings are required or to learn how to adjust the BACnet settings, please refer Section 7 of this manual.

WARNING: Only use screws supplied by MSA Safety in the holes found on the back of the unit when attaching the optional DIN rail bracket. Use of any other screws may damage the unit.

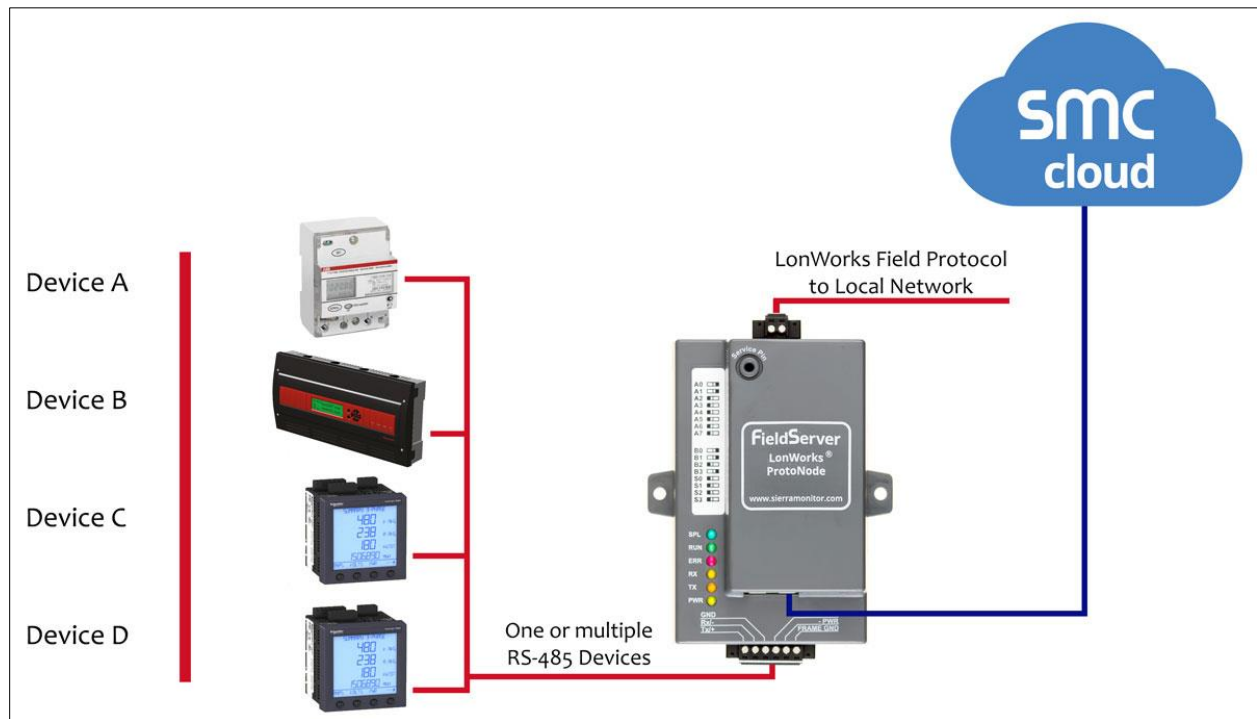
FPC-N34 Connectivity Diagram:



² Metasys is a registered trademark of Johnson Controls Inc.

³ LonWorks is a registered trademark of Echelon Corporation

FPC-N35 Connectivity Diagram:



The ProtoNode can connect with the SMC Cloud. The SMC Cloud allows technicians, the OEM's support team and MSA Safety's support team to remotely connect to the ProtoNode. The SMC Cloud provides the following capabilities for any registered devices in the field:

- Remotely monitor and control devices.
- Collect device data and view it on the SMC Cloud Dashboard and the SMC Smart Phone App.
- Create user defined device notifications (alarm, trouble and warning) via SMS and/or Email.
- Generate diagnostic captures (as needed for troubleshooting) without going to the site.

For more information about the SMC Cloud, refer to the [SMC Cloud Start-up Guide](#).

3 SETUP FOR PROTONODE

3.1 Record Identification Data

Each ProtoNode has a unique part number located on the side or the back of the unit. This number should be recorded, as it may be required for technical support. The numbers are as follows:

Model	Part Number
ProtoNode FPC-N34	FPC-N34
ProtoNode FPC-N35	FPC-N35

Figure 1: ProtoNode Part Numbers

- FPC-N34 units have the following 3 ports: RS-485 + Ethernet + RS-485
- FPC-N35 units have the following 3 ports: LonWorks + Ethernet + RS-485

3.2 Point Count Capacity

The total number of points presented by the device(s) attached to the ProtoNode cannot exceed:

Part number	Total Points
FPC-N34-0970	5,000
FPC-N35-0991	5,000

Figure 2: Supported Point Count Capacity

Devices	Points Per Device
Unity 1.0 Control (includes: Evergreen, SlimFit 550-750 Series 2 & 3, and SlimFit 1000-2000 Series 2 SVF Models Series 1)	831
SlimFit 1000-2000 Series 1 (SF_SOLA)	144

Figure 3: Points per Device

3.3 Configuring Device Communications

3.3.1 Confirm the Device and ProtoNode COM Settings Match

- Any connected serial device **MUST** have the same baud rate, data bits, stop bits, and parity settings as the ProtoNode.
- Figure 4** specifies the device serial port settings required to communicate with the ProtoNode.

Port Setting	SlimFit 1000-2000 Series 1 (SOLA)	Unity 1.0 Control (Evergreen/ SlimFit 550-750 Series 2 & 3/ SlimFit 1000-2000 Series 2/ SVF Models Series 1)
Protocol	Modbus RTU	Modbus RTU
Baud Rate	38400	19200
Parity	None	None
Data Bits	8	8
Stop Bits	1	2
Figure 4: COM Settings		

NOTE: The ProtoNode default setting for the Modbus RTU serial baud rate is 19200. When connecting devices with a different baud rate (SlimFit 1000-2000 Series 1), the baud rate must be changed via the ProtoNode Web Configurator (Section 7.4).

3.3.2 Set Node-ID for Any Device Attached to the ProtoNode

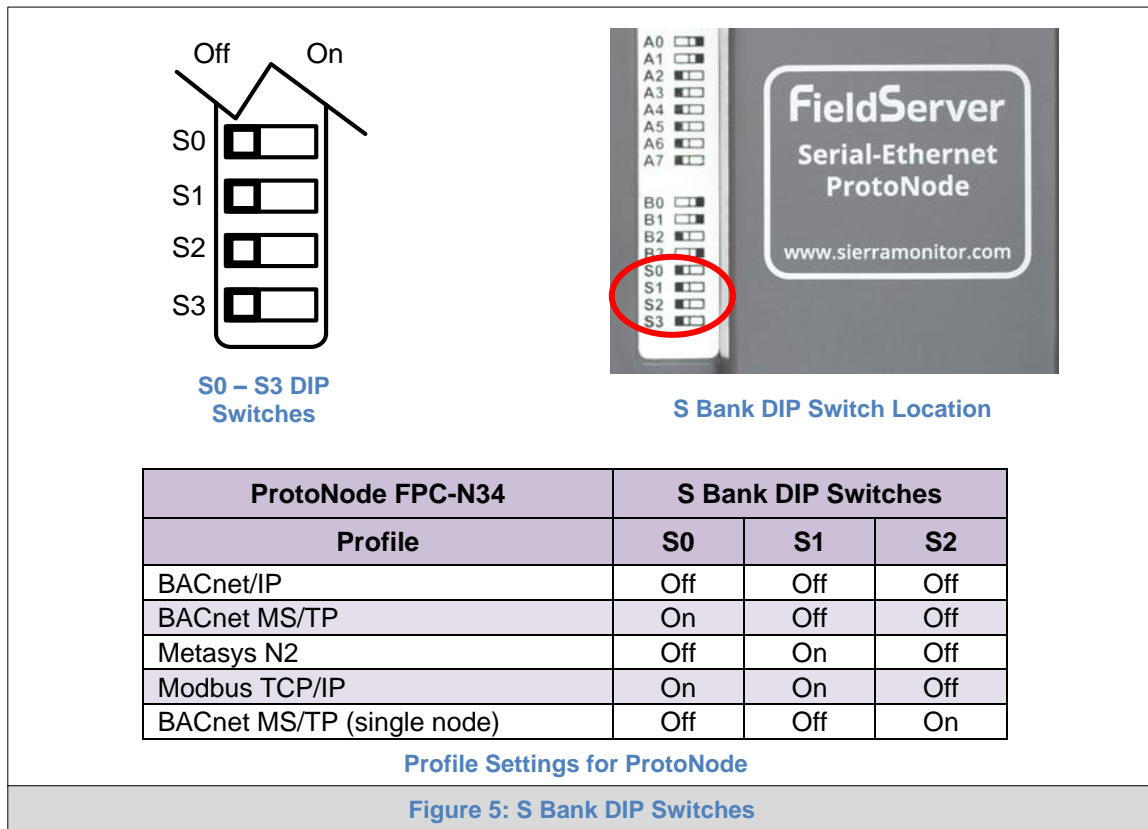
- Set Node-ID for any device attached to ProtoNode. The Node-ID needs to be uniquely assigned between 1 and 255. **For the first device use Node-ID 250.**
- Document the Node-ID that is assigned to any device. The Node-ID assigned is used for deriving the Device Instance for BACnet/IP and BACnet MS/TP. (Section 3.5.2)

NOTE: The Metasys N2 and Modbus TCP/IP field protocol Node-ID is automatically set to be the same value as the Node-ID of the device.

3.4 Selecting the Desired Protocol Configuration

NOTE: The instructions in this section are for the BMS side protocol.

- ProtoNode FPC-N34 units use the “S” bank of DIP switches (S0 – S3) to select the protocol configuration.
 - See the table in [Figure 5](#) for the switch settings to select
 - The OFF position is when the DIP switches are set closest to the outside of the box
- ProtoNode FPC-N35 units do not use the “S” bank DIP switches (S0 – S3) to select a field protocol.
 - On ProtoNode FPC-N35 units, these switches are disabled; the field protocol is always LonWorks



NOTE: When setting DIP switches, ensure that power to the board is OFF.

3.5 BMS Network Settings: MAC Address, Device Instance and Baud Rate

3.5.1 BACnet MS/TP (FPC-N34): Setting the MAC Address for BMS Network

- Only 1 MAC Address is set for ProtoNode regardless of how many devices are connected to ProtoNode.
- Set the BACnet MS/TP MAC Address of the ProtoNode to a value between 1 to 127 (Master MAC Address); this is so that the BMS front end can find ProtoNode via BACnet Auto-Discovery.

NOTE: Never set a BACnet MS/TP MAC Address of the ProtoNode to a value from 128 to 255. Addresses from 128 to 255 are Slave Addresses and cannot be discovered by BMS front ends that support Auto-Discovery of BACnet MS/TP devices.

- Set “A” bank DIP switches A0 – A7 to assign a MAC Address to the ProtoNode for BACnet MS/TP.
- Refer to [Appendix D.1](#) for the complete range of MAC Addresses and DIP switch settings.

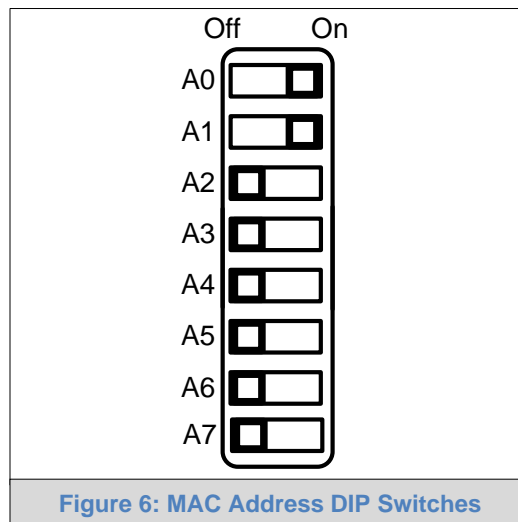


Figure 6: MAC Address DIP Switches

NOTE: When setting DIP switches, ensure that power to the board is OFF.

3.5.2 BACnet (FPC-N34): Calculating the Default Device Instance

- The Device Instance value is automatically generated using the following formula:
 $BACnet\ Device\ Instance = (Device\ Node\ ID) + (Default\ Node\ Offset)$

NOTE: The default Node Offset is 50,000.

For example, if Device A has a Node ID of 1 and Device B has a Node ID of 2, then:

BACnet Device Instance A = (1) + (50000) = 50001

BACnet Device Instance B = (2) + (50000) = 50002

NOTE: The Node ID is set in Section 3.3.2.

- To reach a specific BACnet Device Instance result, refer to Section 7.5.

3.5.3 FPC-N34: Setting the Baud Rate for BMS Network

- DIP switches B0 – B3 can be used to set the field baud rate of the ProtoNode to match the baud rate required by the BMS for BACnet MS/TP.
- The ProtoNode baud rate for Metasys N2 is set for 9600. DIP switches B0 – B3 are disabled for Metasys N2 on the ProtoNode FPC-N34.
- DIP switches B0 – B3 are disabled on the ProtoNode FPC-N35 (LonWorks).

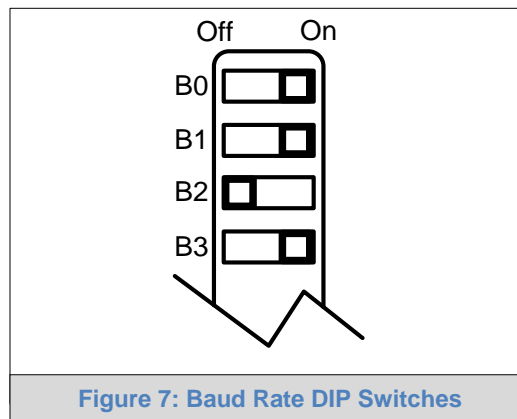


Figure 7: Baud Rate DIP Switches

NOTE: When setting DIP switches, ensure that power to the board is OFF.

3.5.3.1 Baud Rate DIP Switch Selection

Baud	B0	B1	B2	B3
9600	On	On	On	Off
19200	Off	Off	Off	On
38400*	On	On	Off	On
57600	Off	Off	On	On
76800	On	Off	On	On

Figure 8: BMS Baud Rate

* Factory default setting = 38400

4 INTERFACING PROTONODE TO DEVICES

4.1 ProtoNode FPC-N34 and FPC-N35 Showing Connection Ports

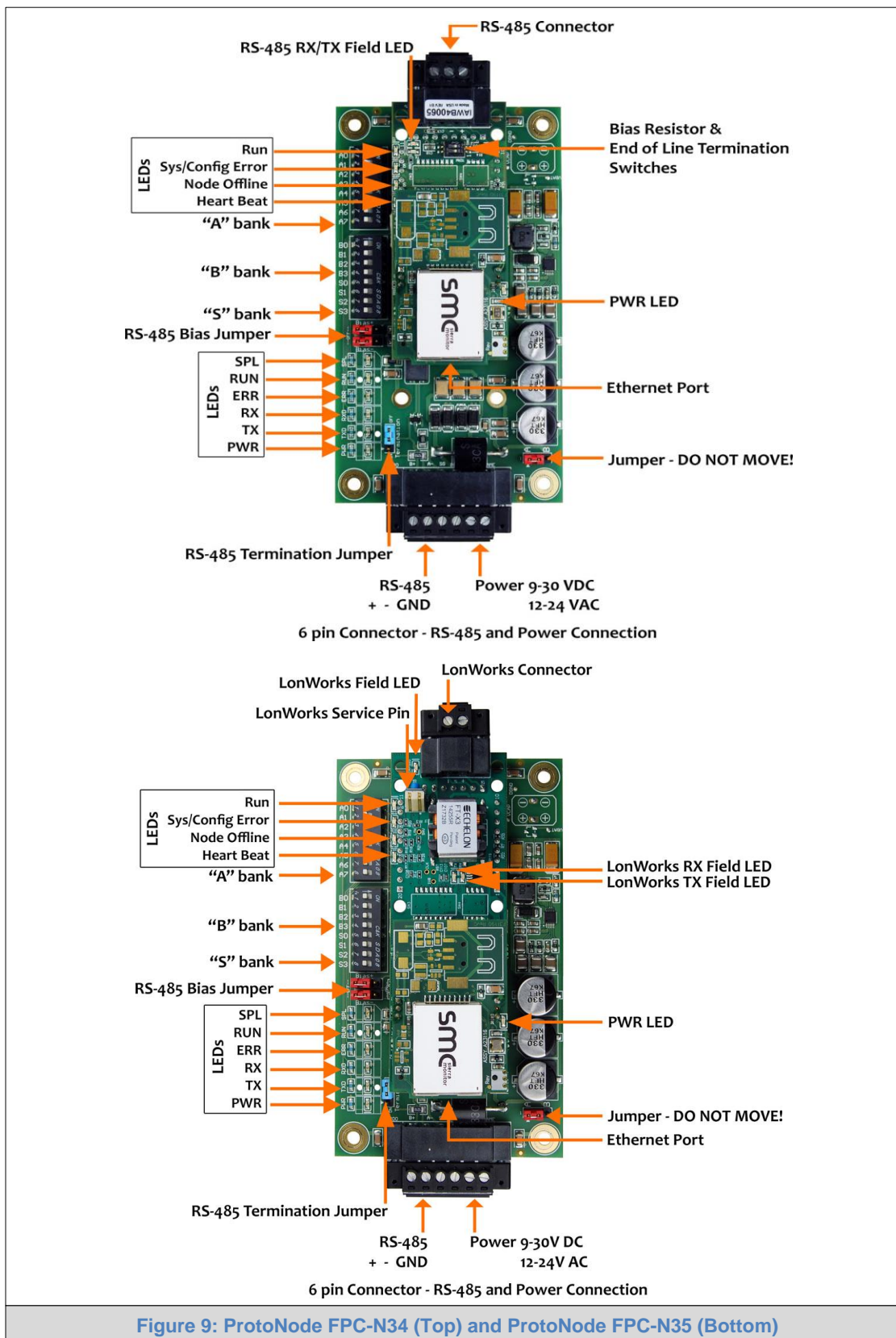


Figure 9: ProtoNode FPC-N34 (Top) and ProtoNode FPC-N35 (Bottom)

4.2 Serial Device Connections to the ProtoNode

ProtoNode 6 Pin Phoenix connector:

- The 6 pin Phoenix connector is the same for ProtoNode FPC-N34 and FPC-N35 (LonWorks).
- Pins 1 through 3 are for RS-485 devices.
 - Use standard grounding principles for RS-485 GND
- Pins 4 through 6 are for power. **Do not connect power until Section 4.5.**

Device Pins	ProtoNode Pin #	Pin Assignment
Pin RS-485 +	Pin 1	RS-485 +
Pin RS-485 -	Pin 2	RS-485 -
Pin GND	Pin 3	RS-485 GND
Power In (+)	Pin 4	V +
Power In (-)	Pin 5	V -
Frame Ground	Pin 6	FRAME GND

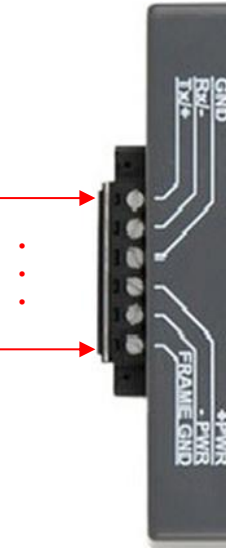


Figure 10: Device and Power Connections

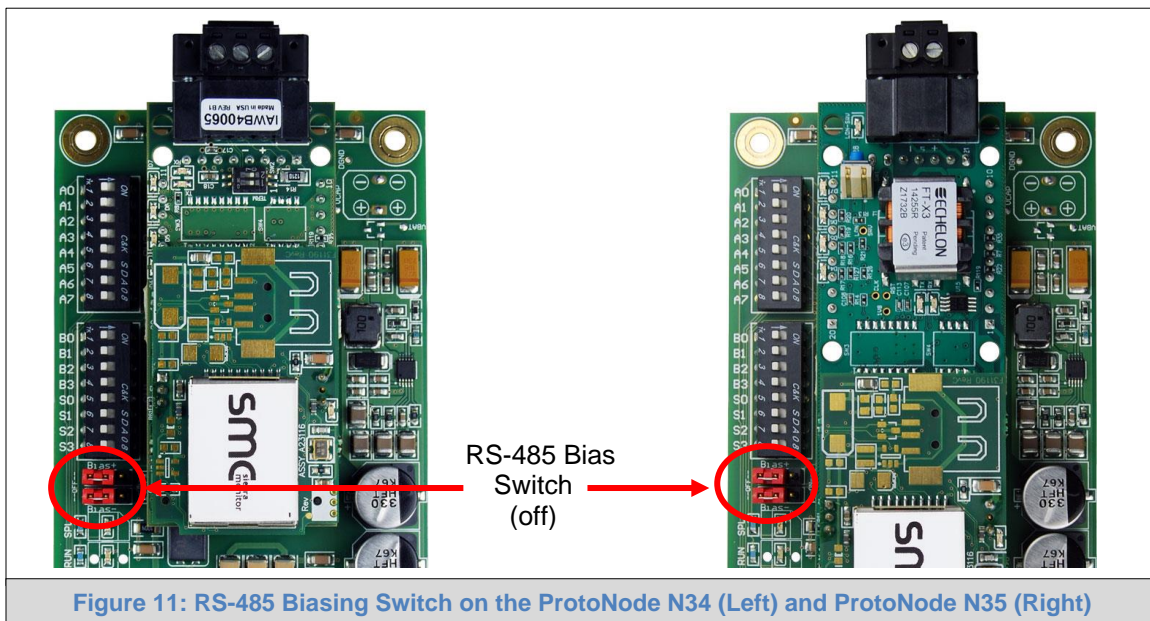
4.2.1 Biasing the RS-485 Device Network

NOTE: Bias Resistors are defaulted to the ON position. If biasing is already set in the network, follow instructions below to turn biasing to the OFF position.

- An RS-485 network with more than one device needs to have biasing to ensure proper communication. The biasing only needs to be done on one device.
- The ProtoNode has 510 ohm resistors that can be used to set the biasing.
- The ON position is when the 2 red biasing jumpers straddle the 4 pins in the right-most position on the board. See [Figure 11](#) for the intended orientation of the board.

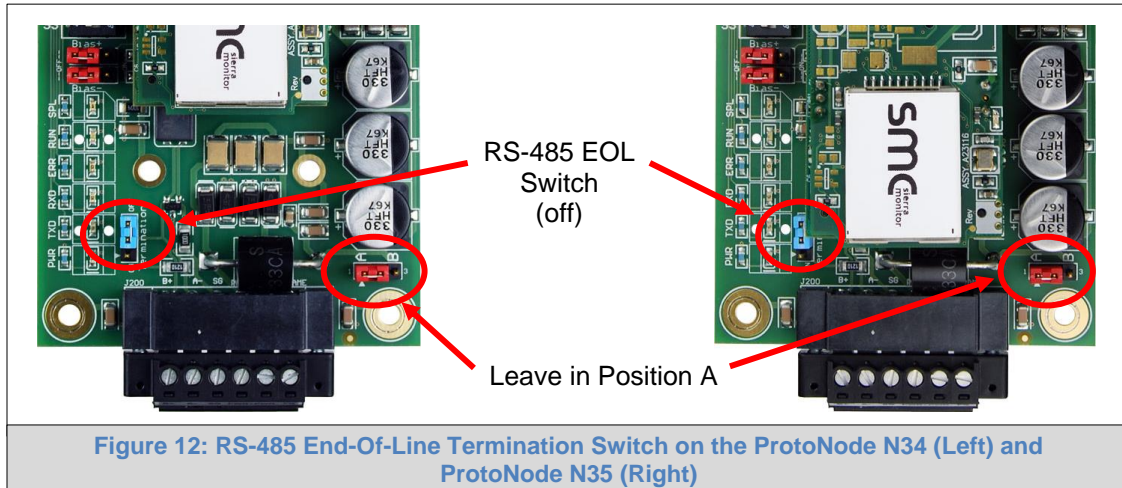
NOTICE: Turn biasing OFF if there are bias resistors anywhere else on the same Modbus network that is to be connected to the ProtoNode .

- To turn biasing OFF, move the 2 red biasing jumpers to straddle the 4 pins to the left-most position as shown in [Figure 11](#).



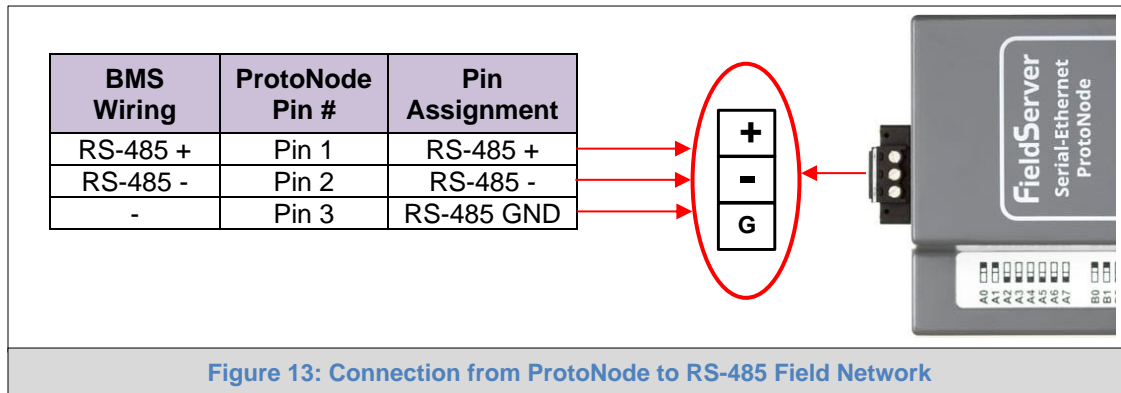
4.2.2 End of Line Termination Switch for the RS-485 Device Network

- On long RS-485 cabling runs, the RS-485 trunk must be properly terminated at each end.
- The ProtoNode has an end of line (EOL) blue jumper. The default setting for this blue EOL switch is OFF with the jumper straddling the pins closest to the inside of the board of the ProtoNode.
 - On short cabling runs the EOL switch does not need to be turned ON
- **If the ProtoNode is placed at one of the ends of the trunk, set the blue EOL jumper to the ON position straddling the pins closest to the outside of the board of the ProtoNode.**
- **Always leave the single red jumper in the A position (default factory setting).**



4.3 Serial Network (FPC-N34): Wiring Field Port to RS-485 Network

- Connect the RS-485 network wires to the 3-pin RS-485 connector on ProtoNode as shown below in **Figure 13**.
 - Use standard grounding principles for RS-485 GND
- See **Section 7.6** for information on connecting to an Ethernet network.



- If the ProtoNode is the last device on the trunk, then the end of line (EOL) termination switch needs to be enabled. See **Figure 14** for the orientation of switch positions referenced below.
 - The default setting from the factory is OFF (switch position = right side)
 - To enable the EOL termination, turn the EOL switch ON (switch position = left side)



- If more than one RS-485 device is connected to the network, then the field bias resistor switch needs to be enabled to ensure proper communication. See **Figure 14** for the orientation of switch positions referenced below.
 - The default factory setting is OFF (switch position = right side)
 - To enable biasing, turn the bias switch ON (switch position = left side)

NOTE: Biasing only needs to be enabled on one device. The ProtoNode has 510 ohm resistors that are used to set the biasing.

4.4 LonWorks (FPC-N35): Wiring LonWorks Devices to the LonWorks Terminal

- Wire the LonWorks device network to the ProtoNode LonWorks Terminal.
 - Use approved cable per the FT-10 installation guidelines
 - LonWorks has no polarity.



Figure 15: LonWorks Terminal

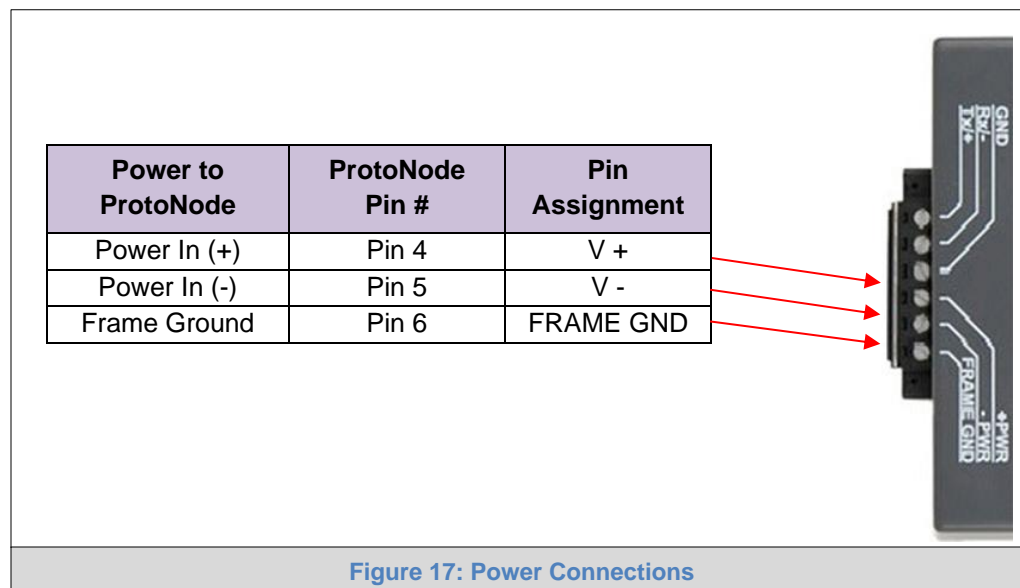
4.5 Power-Up ProtoNode

Check power requirements in the table below:

Power Requirement for ProtoNode External Gateway			
	Current Draw Type		
ProtoNode Family	12VDC/AC	24VDC/AC	30VDC
FPC – N34 (Typical)	170mA	100mA	80mA
FPC – N34 (Maximum)	240mA	140mA	100mA
FPC – N35 (Typical)	210mA	130mA	90mA
FPC – N35 (Maximum)	250mA	170mA	110mA
NOTE: These values are 'nominal' and a safety margin should be added to the power supply of the host system. A safety margin of 25% is recommended.			
Figure 16: Required Current Draw for the ProtoNode			

Apply power to the ProtoNode as shown below in [Figure 17](#). Ensure that the power supply used complies with the specifications provided in [Appendix E.1](#).

- ProtoNode accepts either 9-30VDC or 12-24VAC on pins 4 and 5.
- Frame GND should be connected.



5 CONNECT THE PC TO THE PROTONODE

5.1 Connecting to the ProtoNode via Ethernet

Connect a Cat-5 Ethernet cable (straight through or cross-over) between the local PC and ProtoNode.

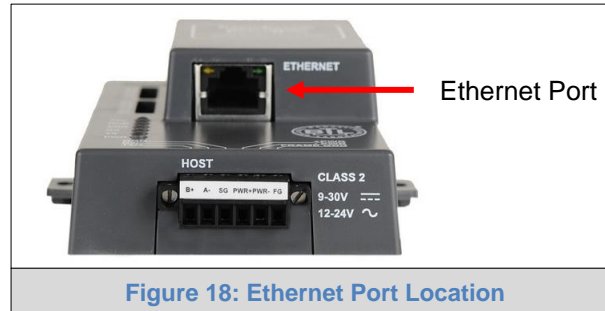




Figure 18: Ethernet Port Location

5.1.1 Changing the Subnet of the Connected PC

The default IP Address for the ProtoNode is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and ProtoNode are on different IP networks, assign a static IP Address to the PC on the 192.168.1.xxx network.

For Windows 10:

- Find the search field in the local computer's taskbar (usually to the right of the windows icon ) and type in "Control Panel".
- Click "Control Panel", click "Network and Internet" and then click "Network and Sharing Center".
- Click "Change adapter settings" on the left side of the window.
- Right-click on "Local Area Connection" and select "Properties" from the dropdown menu.
- Highlight ☒  **Internet Protocol Version 4 (TCP/IPv4)** and then click the Properties button.
- Select and enter a static IP Address on the same subnet. For example:

☒ Use the following IP address:

IP address:	192 . 168 . 1 . 11
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	. . .

- Click the Okay button to close the Internet Protocol window and the Close button to close the Ethernet Properties window.

6 SETUP WEB SERVER SECURITY

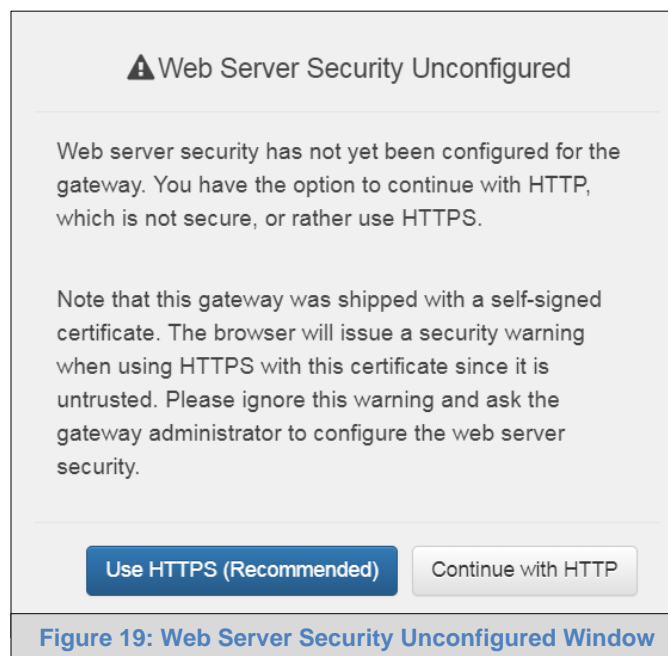
Navigate to the IP Address of the ProtoNode on the local PC by opening a web browser and entering the IP Address of the ProtoNode; the default Ethernet address is 192.168.1.24.

NOTE: If the IP Address of the ProtoNode was changed, the assigned IP Address can be discovered using the FS Toolbox utility. See [Appendix A.1](#) for instructions.

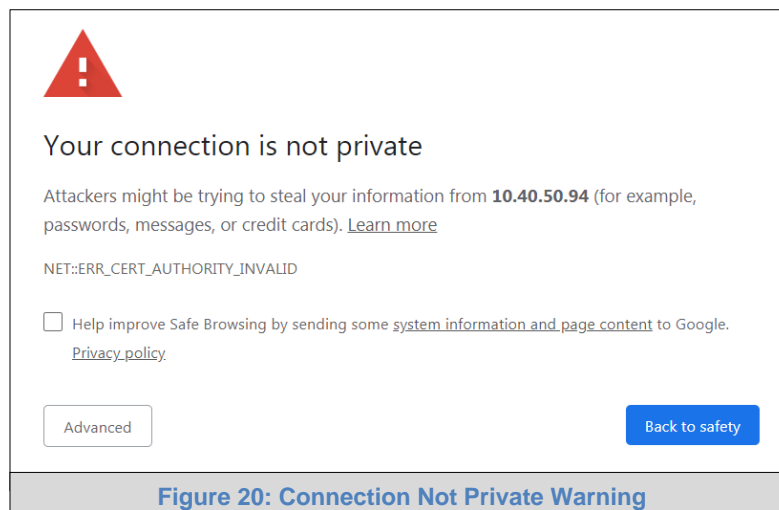
6.1 Login to the FieldServer

The first time the FieldServer GUI is opened in a browser, the IP Address for the gateway will appear as untrusted. This will cause the following pop-up windows to appear.

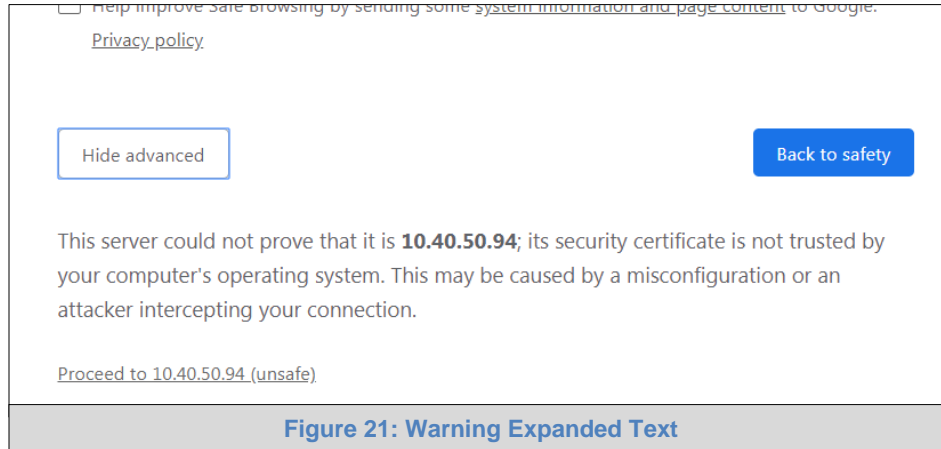
- When the Web Server Security Unconfigured window appears, read the text and choose whether to move forward with HTTPS or HTTP.



- When the warning that "Your connection is not private" appears, click the advanced button on the bottom left corner of the screen.

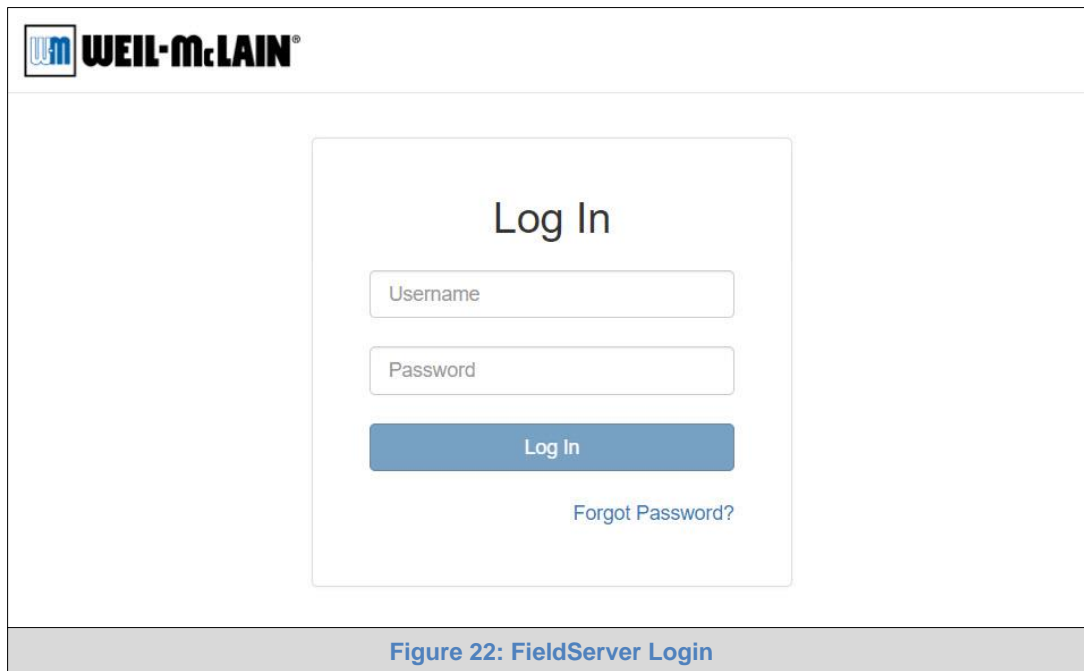


- Additional text will expand below the warning, click the underlined text to go to the IP Address. In the **Figure 21** example this text is “[Proceed to 10.40.50.94 \(unsafe\)](#)”.



- When the login screen appears, put in the Username (default is “admin”) and the Password (found on the label of the FieldServer).

NOTE: There is also a QR code in the top right corner of the FieldServer label that shows the default unique password when scanned.

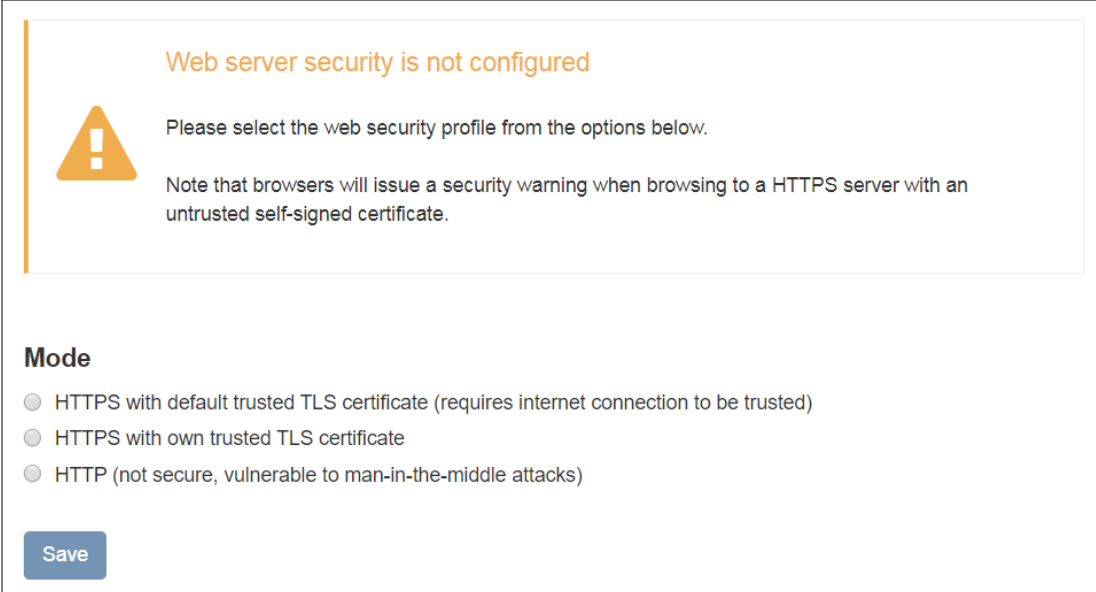


NOTE: A user has 5 attempts to login then there will be a 10-minute lockout. There is no timeout on the FieldServer to enter a password.

NOTE: To create individual user logins, go to [Appendix B.5](#).

6.2 Select the Security Mode

On the first login to the FieldServer, the following screen will appear that allows the user to select which mode the FieldServer should use.



Web server security is not configured

Please select the web security profile from the options below.

Note that browsers will issue a security warning when browsing to a HTTPS server with an untrusted self-signed certificate.

Mode

- ☐ HTTPS with default trusted TLS certificate (requires internet connection to be trusted)
- ☐ HTTPS with own trusted TLS certificate
- ☐ HTTP (not secure, vulnerable to man-in-the-middle attacks)

Save

Figure 23: Security Mode Selection Screen

NOTE: Cookies are used for authentication.

NOTE: To change the web server security mode after initial setup, go to [Appendix B.4](#).

The sections that follow include instructions for assigning the different security modes.

6.2.1 HTTPS with Own Trusted TLS Certificate

This is the recommended selection and the most secure.

- Once this option is selected, the Certificate, Private Key and Private Key Passphrase fields will appear under the mode selection.

Certificate

```
XzyMbQZFIRuJZJPe7CTHLcHOrHLowoUFoVTaBMYd4d6VGdNkIKazByWKcNOL7mrX
A4IBAQBFBM+IPvOx3T/47VEmaiXqE3bx3zEuBFJ6pWPlw7LHf2r2ZoHw+9xb+aNMU
dVYAelhBMTMSni2ERvQVp0xj3psSv2EJyKXS1bOYNRLsq7UzpwuAdT/Wy3o6vUM5
K+Cwf9qEoQ0LuxDZTIEct67MkcHMiuFi5pk7TRicHnQF/sfOAYOulduHOy9exlk9
FmHFVDIzI/cJUaF+e74EuSph+gEr0IQo2wmmhyc7L22UXse1NoOfU2Zg0Eu1VVtu
JRryaMWIRFEWuuzMGZtKFWVC+8q2JQsVcgrWWM7naoblEhOCMH+sKHJMCxDoXGt
vtZjpZu0AL51YXxWSVcyZdGiAP5e
-----END CERTIFICATE-----
```

Private Key

```
sHB0zZoHr4YQSDk2BbYVzbl0LDuKtc8+JiO3ooGjoTuHngkeAj/fKfbTAsKeAzW
gKQe+H5UQNK0bdvZfOJrm6daDK2vDmR5k+JUUhEj5N49upIroB97MQqYotzqfT+
THlbpq5t1SIK617k04ObKmHF5l8fck+ru545sVmpeezh0m5j5SURYAZMvbq5daCu
J4l5NlIhbEvxRF4UK41ZDMCvujOPcBKUWrb1a/3XXnDnM2K9xyz2wze998D6Wk46
+7aQFY9F+7j5lJmkoS3GYtwCyH5jP+mPP1K6RnuiD019wvGPb4dtN/RTnfd0eF
GYeVSkI9fxxkxDOftfdWRZbM/rPjn4tmO1Xf8HqQNVN1x/iaMynOXG4cukoi4+VO
u0rZaUEsII2zNkfrn7fAASm5NBWg202Cy9IAYnuujs3aALi5uGBeekA62oTMxlzx
-----END RSA PRIVATE KEY-----
```

Private Key Passphrase

Specify if encrypted

Save

Figure 24: Security Mode Selection Screen – Certificate & Private Key

- Copy and paste the Certificate and Private Key text into their respective fields. If the Private Key is encrypted type in the associated Passphrase.
- Click Save.
- A “Redirecting” message will appear. After a short time the Web Configurator page will open.

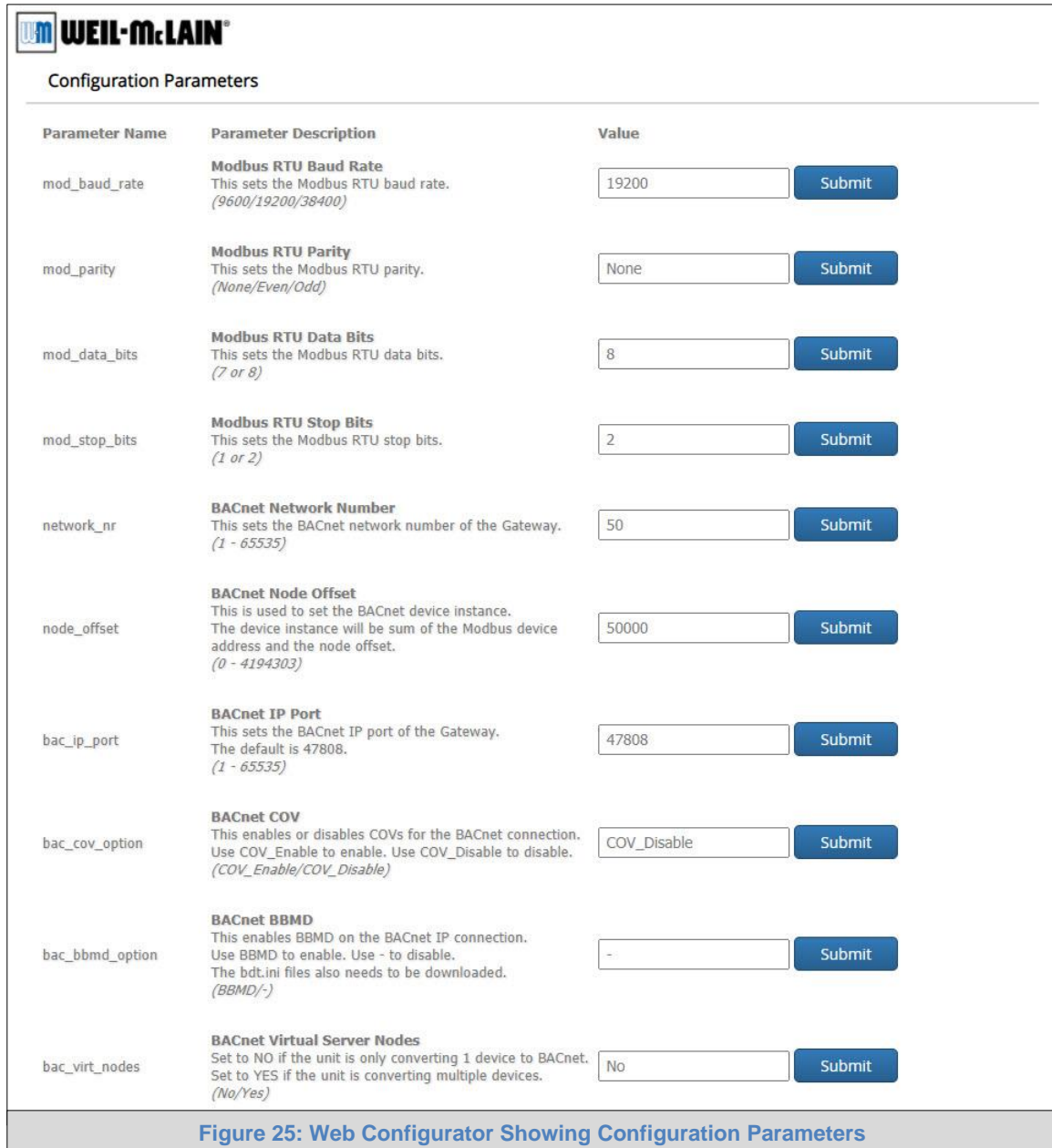
6.2.2 HTTPS with Default Untrusted Self-Signed TLS Certificate or HTTP with Built-in Payload Encryption

- Select the desired option and click the Save button.
- A “Redirecting” message will appear. After a short time the Web Configurator page will open.

7 CONFIGURE THE PROTONODE

7.1 Set Configuration Parameters

- On the Web Configurator page, the configuration parameters are listed.



Parameter Name	Parameter Description	Value
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400)	19200 <input type="button" value="Submit"/>
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	None <input type="button" value="Submit"/>
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	8 <input type="button" value="Submit"/>
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	2 <input type="button" value="Submit"/>
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	50 <input type="button" value="Submit"/>
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	50000 <input type="button" value="Submit"/>
bac_ip_port	BACnet IP Port This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	47808 <input type="button" value="Submit"/>
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	COV_Disable <input type="button" value="Submit"/>
bac_bbmd_option	BACnet BBMD This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini file also needs to be downloaded. (BBMD/-)	- <input type="button" value="Submit"/>
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	No <input type="button" value="Submit"/>

Figure 25: Web Configurator Showing Configuration Parameters

NOTE: Protocol specific parameters are only visible when the associated protocol is selected via S-bank DIP switch (Section 3.4).

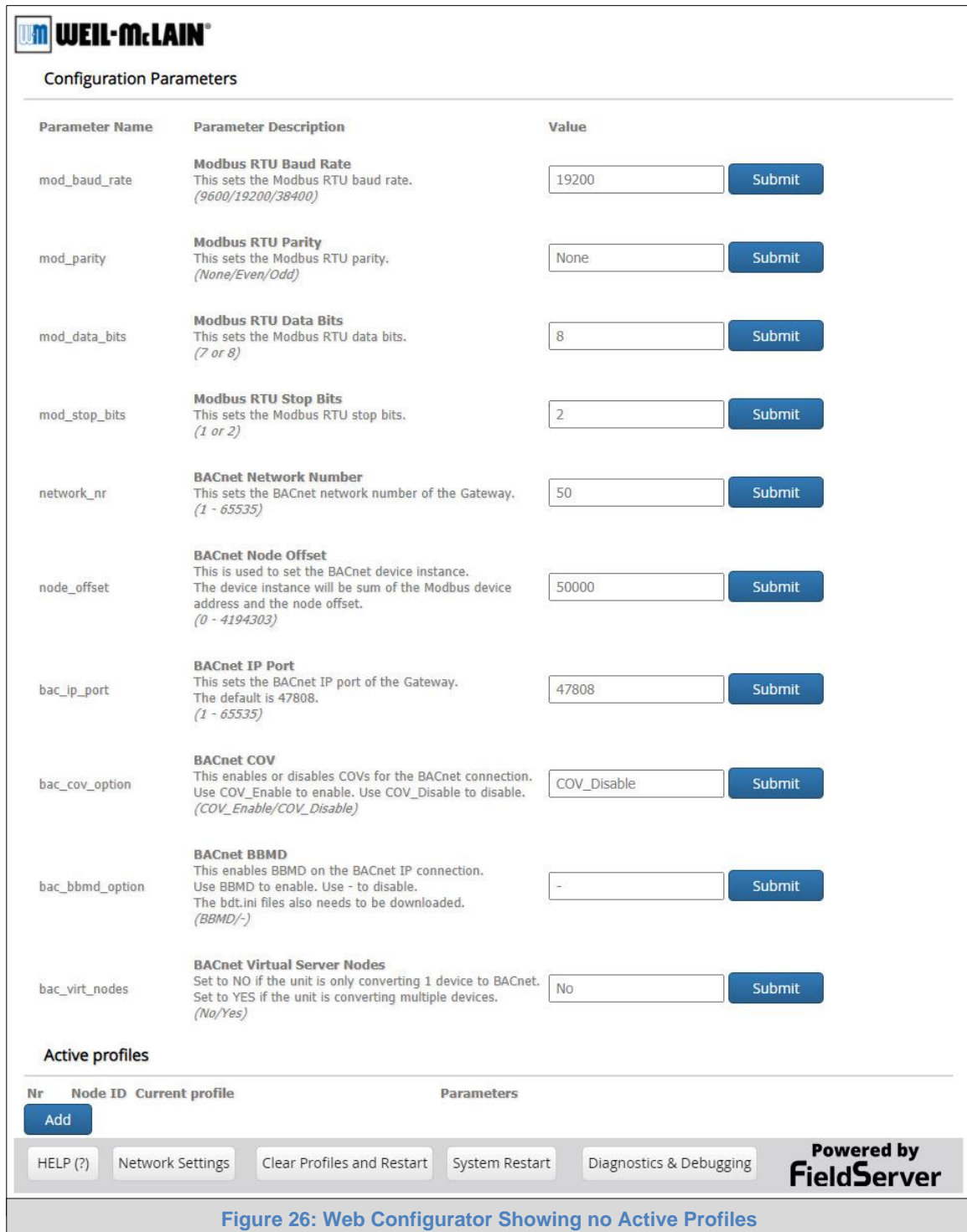
NOTE: If Modbus TCP/IP was selected and is used for the field protocol, skip Section 7.2. Device profiles are NOT used for Modbus TCP/IP.

- Ensure that all parameters are entered for successful operation of the gateway. Find the legal value options for each parameter under the Parameter Description in parentheses.

NOTE: If multiple devices are connected to the ProtoNode, set the BACnet Virtual Server Nodes field to “Yes”; otherwise leave the field on the default “No” setting.

7.2 Selecting Profiles for Devices Connected to ProtoNode

- In the Web Configurator, the Active Profiles are shown below the Configuration Parameters. The Active Profiles section lists the currently active device profiles, including previous Web Configurator additions. The Unity 1.0 profile for BACnet MS/TP is loaded as active by default. (Figure 26)



The screenshot shows the Weil-McLain Web Configurator interface. At the top is the Weil-McLain logo. Below it is the 'Configuration Parameters' section, which contains a table of parameters. Each parameter has a name, a description, a value field, and a 'Submit' button. The parameters are: mod_baud_rate (19200), mod_parity (None), mod_data_bits (8), mod_stop_bits (2), network_nr (50), node_offset (50000), bac_ip_port (47808), bac_cov_option (COV_Disable), bac_bbmd_option (-), and bac_virt_nodes (No). Below the configuration parameters is the 'Active profiles' section, which is currently empty. At the bottom of the interface are several buttons: 'Add', 'HELP (?)', 'Network Settings', 'Clear Profiles and Restart', 'System Restart', 'Diagnostics & Debugging', and a 'Powered by FieldServer' logo.

Parameter Name	Parameter Description	Value
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400)	19200
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	None
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	8
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	2
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	50
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	50000
bac_ip_port	BACnet IP Port This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	47808
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	COV_Disable
bac_bbmd_option	BACnet BBMD This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini files also needs to be downloaded. (BBMD/-)	-
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	No

Active profiles

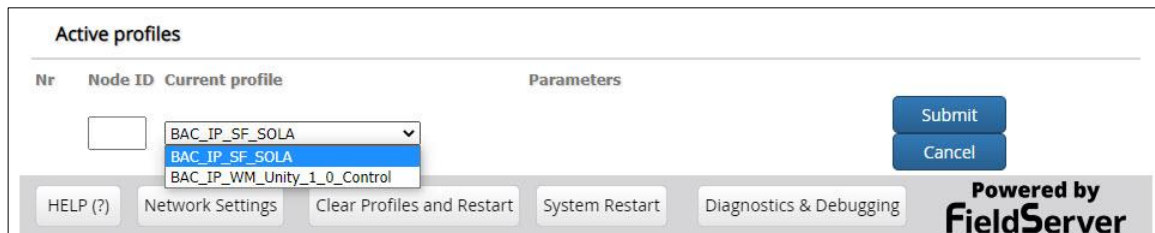
Nr	Node ID	Current profile	Parameters
Add			

HELP (?) Network Settings Clear Profiles and Restart System Restart Diagnostics & Debugging

Powered by FieldServer

Figure 26: Web Configurator Showing no Active Profiles

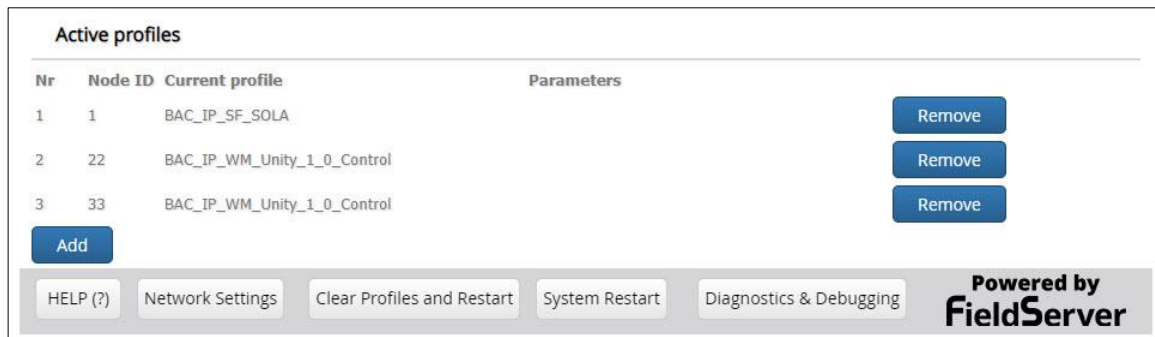
- To add an active profile to support a device, click the Add button under the Active Profiles heading. Select a profile from the drop-down menu field that appears underneath the Current profile column.
- Once the Profile for the device has been selected from the drop-down list, enter the value of the device's Node-ID which was assigned in **Section 3.3.2**.



The screenshot shows the 'Active profiles' section of the web configurator. It features a table with columns: 'Nr', 'Node ID', 'Current profile', and 'Parameters'. Below the table, there is an 'Add' button and a dropdown menu for selecting a profile. The dropdown menu is open, showing three options: 'BAC_IP_SF_SOLA', 'BAC_IP_SF_SOLA', and 'BAC_IP_WM_Unity_1_0_Control'. To the right of the table, there are 'Submit' and 'Cancel' buttons. At the bottom of the page, there are navigation buttons: 'HELP (?)', 'Network Settings', 'Clear Profiles and Restart', 'System Restart', and 'Diagnostics & Debugging'. The page is powered by FieldServer.

Figure 27: Web Configurator Showing Available Profile Selection

- Then press the “Submit” button to add the Profile to the list of devices to be configured.
- Repeat this process until all the devices have been added.
- Completed additions are listed under “Active profiles” as shown in **Figure 28**.



The screenshot shows the 'Active profiles' section of the web configurator after adding profiles. The table now contains three rows of data:

Nr	Node ID	Current profile	Parameters
1	1	BAC_IP_SF_SOLA	
2	22	BAC_IP_WM_Unity_1_0_Control	
3	33	BAC_IP_WM_Unity_1_0_Control	

Below the table, there is an 'Add' button. To the right of each row, there is a 'Remove' button. At the bottom of the page, there are navigation buttons: 'HELP (?)', 'Network Settings', 'Clear Profiles and Restart', 'System Restart', and 'Diagnostics & Debugging'. The page is powered by FieldServer.

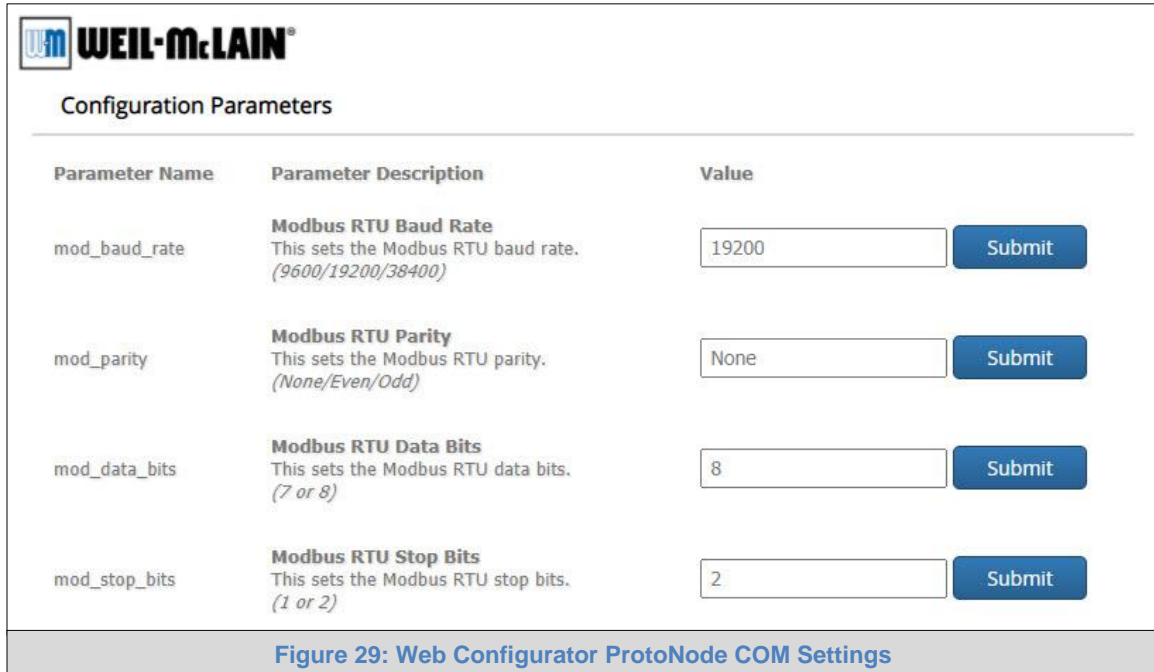
Figure 28: Web Configurator Showing Active Profile Additions

7.3 Verify Device Communications

- **Check that TX and RX LEDs** are rapidly flashing. See **Appendix A.4** for information and images.
- Confirm the software shows communication without errors (**Appendix A.2**).

7.4 Change ProtoNode COM Settings

- In the Web Configurator, the ProtoNode COM Settings are the first parameters displayed.



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Configuration Parameters

Parameter Name	Parameter Description	Value
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400)	19200 <input type="button" value="Submit"/>
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	None <input type="button" value="Submit"/>
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	8 <input type="button" value="Submit"/>
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	2 <input type="button" value="Submit"/>

Figure 29: Web Configurator ProtoNode COM Settings

NOTE: The ProtoNode default setting for the Modbus RTU serial baud rate is 19200 and the default stop bits setting is 1. When connecting devices with different baud rate and stop bits settings (SlimFit 1000-2000 Series 1), these values must be changed via the ProtoNode Web Configurator to match the device.

- Change the ProtoNode COM Settings if needed. See [Figure 30](#) for the correct device settings.

Port Setting	SlimFit 1000-2000 Series 1 (SOLA)	Unity 1.0 Controls (Evergreen/ SlimFit 550-750 Series 2 & 3/ SlimFit 1000-2000 Series 2/ SVF Models Series 1)
Protocol	Modbus RTU	Modbus RTU
Baud Rate	38400	19200
Parity	None	None
Data Bits	8	8
Stop Bits	1	2

Figure 30: Device COM Settings

- If new values are entered in the text field, click Submit then reset the ProtoNode.

7.5 BACnet: Setting Node_Offset to Assign Specific Device Instances

- Follow the steps outlined in **Section 6.1** to access the ProtoNode Web Configurator.
- Node_Offset field shows the current value (default = 50,000).
 - The values allowed for a BACnet Device Instance can range from 1 to 4,194,303
- To assign a specific Device Instance (or range); change the Node_Offset value as needed using the calculation below:

$$\text{Device Instance (desired)} = \text{Node_Offset} + \text{Node_ID}$$

For example, if the desired Device Instance for the device 1 is 50,001 and the following is true:

- Device 1 has a Node-ID of 1
- Device 2 has a Node-ID of 22
- Device 3 has a Node-ID of 33

Then plug the device 1's information into the formula to find the desired Node_Offset:

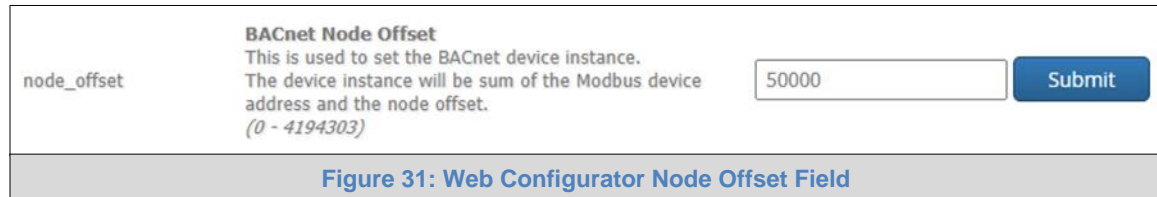
$$50,001 = \text{Node_Offset} + 1$$

$$\text{➤ } 50,000 = \text{Node_Offset}$$

Once the Node_Offset value is input, it will be applied as shown below:

- Device 1 Instance = 50,000 + Node_ID = 50,000 + 1 = 50,001
- Device 2 Instance = 50,000 + Node_ID = 50,000 + 22 = 50,022
- Device 3 Instance = 50,000 + Node_ID = 50,000 + 33 = 50,033

- Click "Submit" once the desired value is entered.



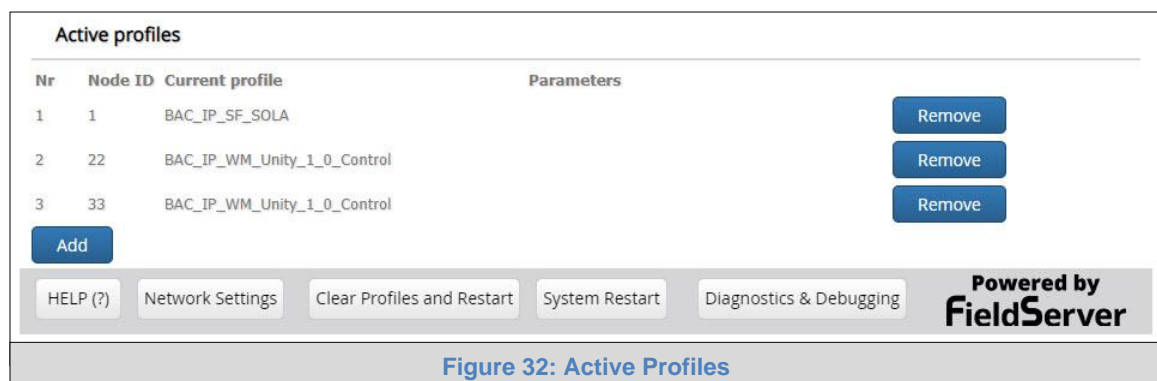
BACnet Node Offset
This is used to set the BACnet device instance.
The device instance will be sum of the Modbus device
address and the node offset.
(0 - 4194303)

node_offset

50000

Submit

Figure 31: Web Configurator Node Offset Field



Active profiles

Nr	Node ID	Current profile	Parameters
1	1	BAC_IP_SF_SOLA	
2	22	BAC_IP_WM_Unity_1_0_Control	
3	33	BAC_IP_WM_Unity_1_0_Control	

Add

Remove Remove Remove


HELP (?) Network Settings Clear Profiles and Restart System Restart Diagnostics & Debugging

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Figure 32: Active Profiles

7.6 Ethernet Network: Setting IP Address for the Field Network

- Follow the steps outlined in **Section 6.1** to access the ProtoNode Web Configurator.
- To access the FS-GUI, click on the “Diagnostics & Debugging” button in the bottom right corner of the page.



Configuration Parameters

Parameter Name	Parameter Description	Value
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400)	19200 <button>Submit</button>
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	None <button>Submit</button>
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	8 <button>Submit</button>
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	2 <button>Submit</button>
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	50 <button>Submit</button>
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	50000 <button>Submit</button>
bac_ip_port	BACnet IP Port This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	47808 <button>Submit</button>
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	COV_Disable <button>Submit</button>
bac_bbmd_option	BACnet BBMD This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini files also needs to be downloaded. (BBMD/-)	- <button>Submit</button>
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	No <button>Submit</button>

Active profiles

Nr	Node ID	Current profile	Parameters
1	1	BAC_IP_SF_SOLA	<button>Remove</button>
2	22	BAC_IP_WM_Unity_1_0_Control	<button>Remove</button>
3	33	BAC_IP_WM_Unity_1_0_Control	<button>Remove</button>

Add

HELP (?)

Network Settings

Clear Profiles and Restart

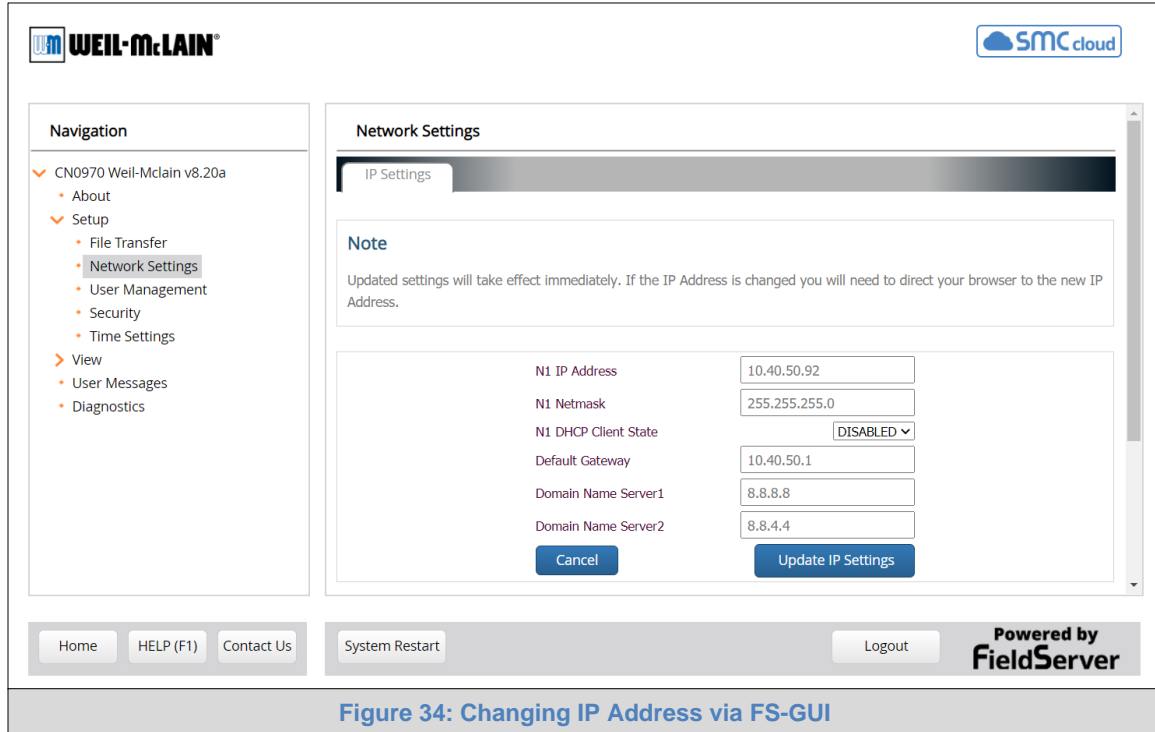
System Restart

Diagnostics & Debugging

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FieldServer

Figure 33: Web Configurator Screen with Active Profiles

- From the FS-GUI landing page, click on “Setup” to expand the navigation tree and then select “Network Settings” to access the IP Settings menu. (Figure 34)



WEIL-McLAIN SMC cloud

Navigation

- ▼ CN0970 Weil-Mclain v8.20a
 - About
 - ▼ Setup
 - File Transfer
 - Network Settings**
 - User Management
 - Security
 - Time Settings
 - View
 - User Messages
 - Diagnostics

Network Settings

IP Settings

Note
Updated settings will take effect immediately. If the IP Address is changed you will need to direct your browser to the new IP Address.

N1 IP Address	<input type="text" value="10.40.50.92"/>
N1 Netmask	<input type="text" value="255.255.255.0"/>
N1 DHCP Client State	<input type="button" value="DISABLED"/>
Default Gateway	<input type="text" value="10.40.50.1"/>
Domain Name Server1	<input type="text" value="8.8.8.8"/>
Domain Name Server2	<input type="text" value="8.8.4.4"/>

Home HELP (F1) Contact Us System Restart Logout **Powered by FieldServer**

Figure 34: Changing IP Address via FS-GUI

- Modify the IP Address (N1 IP Address field) of the ProtoNode Ethernet port.
- If necessary, change the Netmask (N1 Netmask field).
- If necessary, change the IP Gateway (Default Gateway field).

NOTE: If the ProtoNode is connected to a managed switch/router, the IP Gateway of the ProtoNode should be set to the IP Address of that managed switch/router.

- Click the “System Restart” button at the bottom of the page to apply changes and restart the ProtoNode.
- Unplug Ethernet cable from PC and connect it to the network switch or router.
- Record the IP Address assigned to the ProtoNode for future reference.

7.7 How to Start the Installation Over: Clearing Profiles

- Follow the steps outlined in **Section 6.1** to access the ProtoNode Web Configurator.
- At the bottom-left of the page, click the “Clear Profiles and Restart” button.
- Once restart is complete, all past profiles discovered and/or added via Web configurator are deleted. The unit can now be reinstalled.

8 LONWORKS (FPC-N35): COMMISSIONING PROTONODE ON A LONWORKS NETWORK

Commissioning may only be performed by the LonWorks administrator.

8.1 Commissioning ProtoNode FPC-N35 on a LonWorks Network

During the commissioning process, the LonWorks administrator may prompt the user to hit the service pin on the ProtoNode FPC-N35 at a specific point (this step occurs at different points of the commissioning process for each LonWorks network management tool).

- If an XIF file is required, see steps in **Section 8.1.1** to generate XIF.





Figure 35: LonWorks Service Pin Location

8.1.1 Instructions to Upload XIF File from ProtoNode FPC-N35 Using Browser

- Connect a Cat-5 Ethernet cable (straight through or cross-over) between the PC and ProtoNode.
- The default IP Address for the ProtoNode is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and ProtoNode are on different IP networks, assign a static IP Address to the PC on the 192.168.1.xxx network.

For Windows 10:

- Find the search field in the local computer's taskbar (usually to the right of the windows icon ) and type in "Control Panel".
- Click "Control Panel", click "Network and Internet" and then click "Network and Sharing Center".
- Click "Change adapter settings" on the left side of the window.
- Right-click on "Local Area Connection" and select "Properties" from the dropdown menu.
- Highlight ☒  **Internet Protocol Version 4 (TCP/IPv4)** and then click the Properties button.
- Select and enter a static IP Address on the same subnet. For example:

☒ Use the following IP address:

IP address:	192 . 168 . 1 . 11
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	. . .

- Click the Okay button to close the Internet Protocol window and the Close button to close the Ethernet Properties window.

- Open a web browser and go to the following address: [IP Address of ProtoNode]/fserver.xif
 - Example: 192.168.1.24/fserver.xif
- If the web browser prompts to save the file, save the file onto the PC. If the web browser displays the xif file as a web page, save the file onto the local PC as “fserver.xif”.

```
File: fserver.xif generated by LonDriver Revision 1.30(d), XIF Version 4.0
Copyright (c) 2000-2012 by FieldServer Technologies
All Rights Reserved. Run on Thu Jan 1 00:00:00 1970

90:00:95:47:1E:02:04:7C
2 15 1 4 0 14 11 3 3 12 14 11 11 11 11 3 0 16 63 0 1 11 4
32 5 19 13 28 0 0 15 5 3 109 63
1 7 1 0 4 4 4 15 200 0
78125 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 5 8 5 12 14 15
*
"FFP-Lon Demo

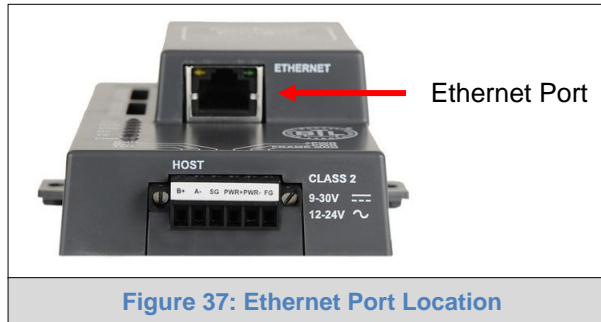
VAR nviAnalog_01 0 0 0 0
0 1 63 0 0 0 0 0 0 0 0 0
*
51 * 1
4 0 4 0 0
VAR nvoAnalog_01 1 0 0 0
0 1 63 1 0 0 0 0 0 0 0 0
*
51 * 1
4 0 4 0 0
VAR nviBinary_01 2 0 0 0
0 1 63 0 0 0 0 0 0 0 0 0
*
95 * 2
1 0 0 0 0
1 0 0 1 0
VAR nvoBinary_01 3 0 0 0
0 1 63 1 0 0 0 0 0 0 0 0
*
95 * 2
1 0 0 0 0
1 0 0 1 0
```

Figure 36: Sample of Fserver.XIF File Generated

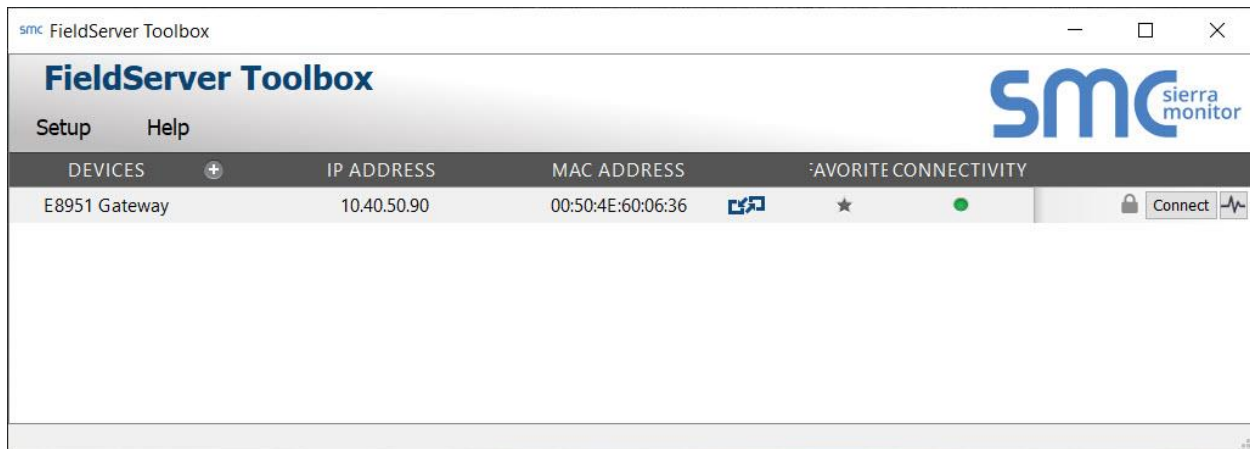
Appendix A. Troubleshooting


Appendix A.1. Lost or Incorrect IP Address

- Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the Sierra Monitor website's [Software Downloads](#).
- Extract the executable file and complete the installation.



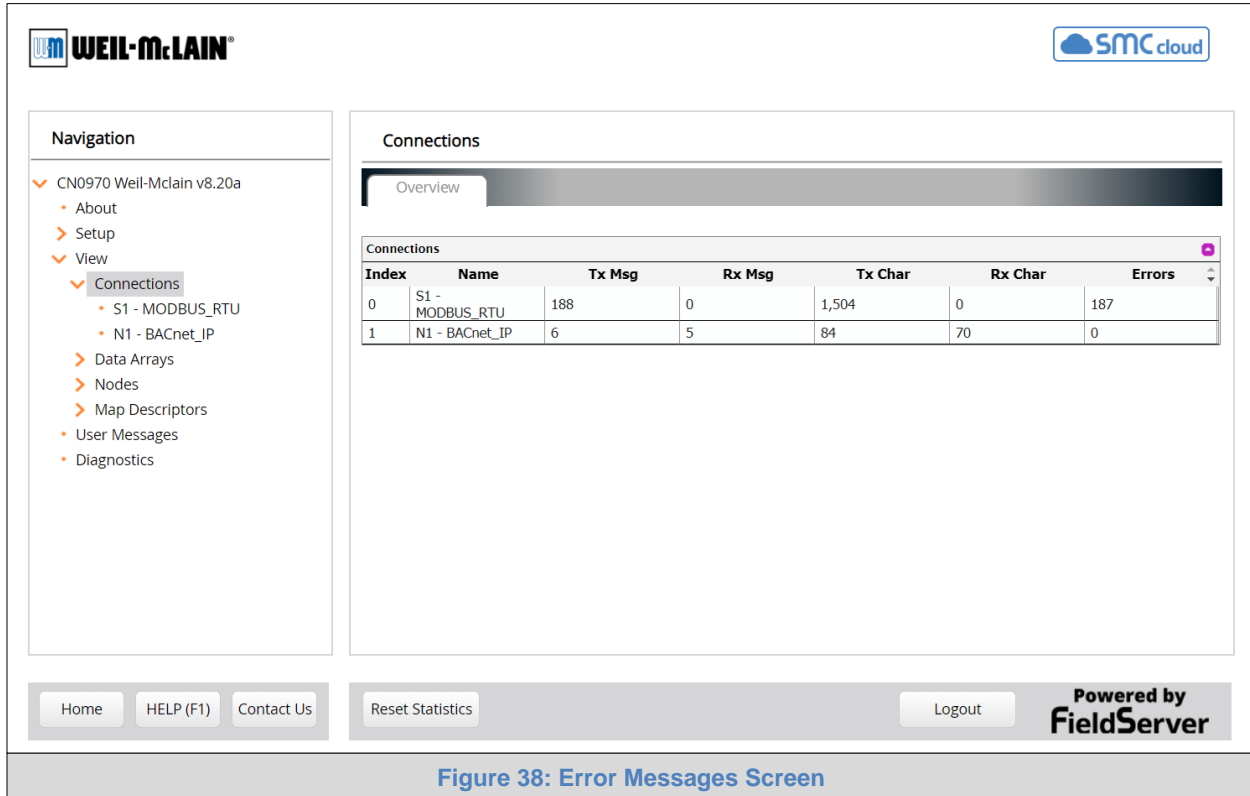
- Connect a standard Cat-5 Ethernet cable between the user's PC and ProtoNode.
- Double click on the FS Toolbox Utility and click Discover Now on the splash page.
- Check for the IP Address of the desired gateway.



- If correcting the IP Address of the gateway: click the settings icon  on the same row as the gateway, then click Network Settings, change the IP Address and click Update IP Settings to save.

Appendix A.2. Viewing Diagnostic Information

- Type the IP Address of the ProtoNode into the web browser or use the FieldServer Toolbox to connect to the ProtoNode.
- Click on Diagnostics and Debugging Button, then click on view, and then on connections.
- If there are any errors showing on the Connection page, refer to [Appendix A.3](#) for the relevant wiring and settings.



Navigation

- ✓ CN0970 Weil-Mclain v8.20a
 - About
 - Setup
 - ✓ View
 - ✓ Connections
 - S1 - MODBUS_RTU
 - N1 - BACnet_IP
 - Data Arrays
 - Nodes
 - Map Descriptors
 - User Messages
 - Diagnostics

Connections

Overview

Index	Name	Tx Msg	Rx Msg	Tx Char	Rx Char	Errors
0	S1 - MODBUS_RTU	188	0	1,504	0	187
1	N1 - BACnet_IP	6	5	84	70	0

Home HELP (F1) Contact Us Reset Statistics Logout **Powered by FieldServer**

Figure 38: Error Messages Screen

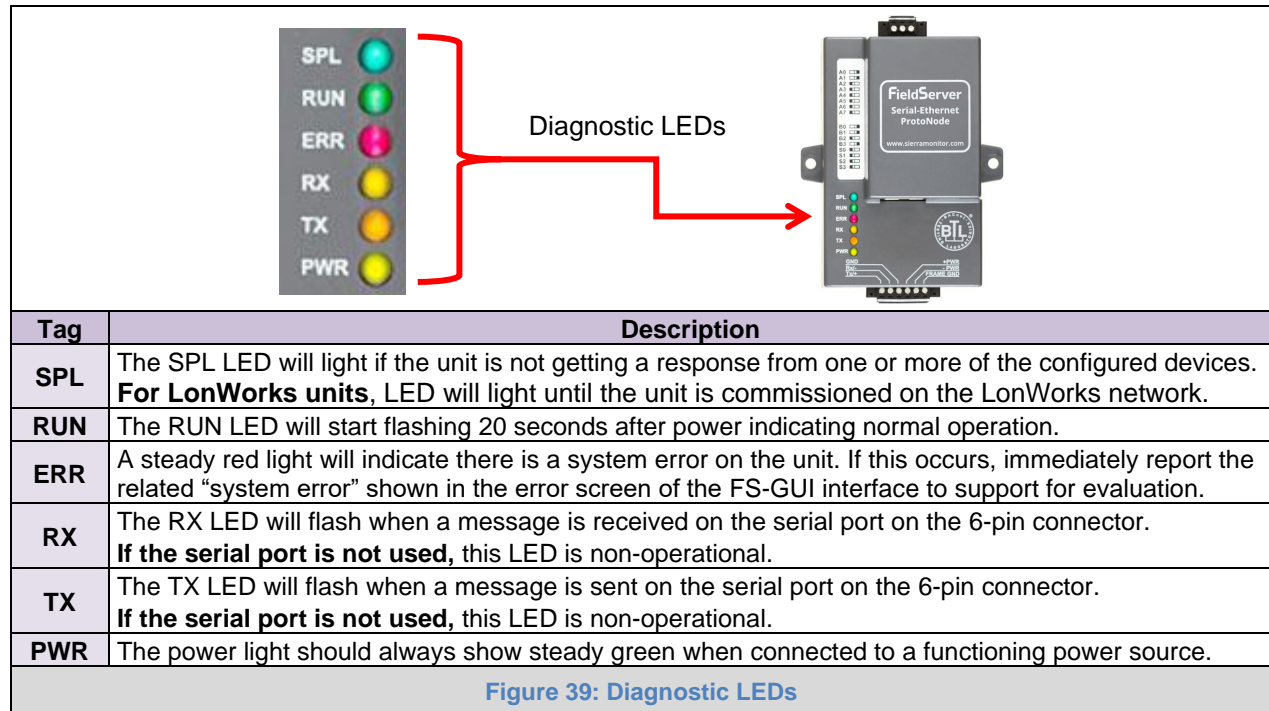
Appendix A.3. Check Wiring and Settings

- No COMS on Modbus RTU side. If the Tx/Rx LEDs are not flashing rapidly then there is a COM issue. To fix this, check the following:
 - Visual observations of LEDs on the ProtoNode ([Appendix A.4](#))
 - Check baud rate, parity, data bits, stop bits
 - Check device address
 - Verify wiring
 - Verify the Modbus device(s) were listed in the Web Configurator ([Section 7.2](#))
- Field COM problems:
 - If Ethernet protocols are used, observe Ethernet LEDs on the ProtoNode ([Appendix A.4](#))
 - Check dipswitch settings (using correct baud rate and device instance)
 - Verify IP Address setting
 - Verify wiring
- If communications are working but the error rate is high change both ProtoNode and Boiler to 9600 baud rate.

NOTE: If the problem persists, a Diagnostic Capture needs to be taken and sent to support. ([Appendix A.5](#))

Appendix A.4. LED Diagnostics for Communications Between ProtoNode and Devices


See the diagram below for ProtoNode FPC-N34 and FPC-N35 LED Locations.

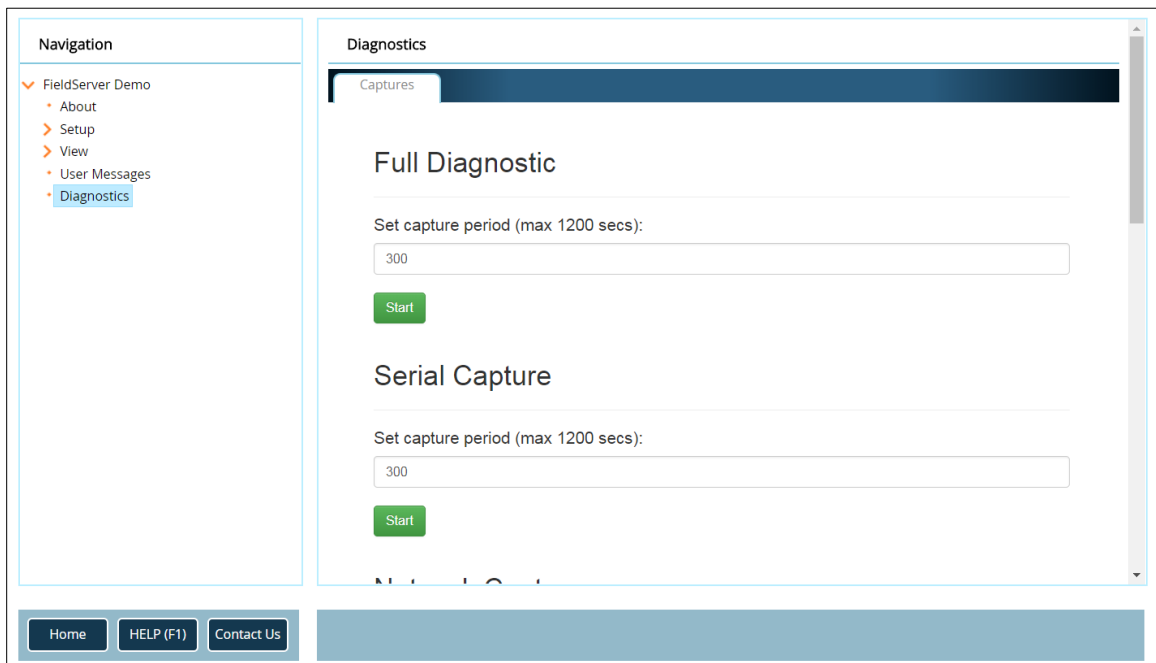


Appendix A.5. Take a FieldServer Diagnostic Capture

When there is a problem on-site that cannot easily be resolved, perform a Diagnostic Capture before contacting support. Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

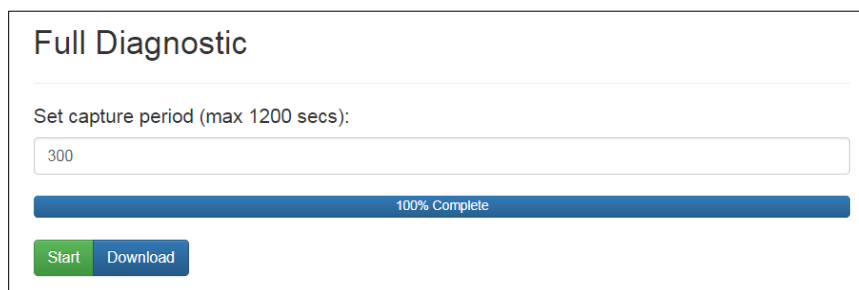
If the FieldServer bios is updated/released on November 2017 or later then the Diagnostic Capture is performed via the gateway's on-board system.

- Access the FieldServer Diagnostics page via one of the following methods:
 - Open the FieldServer FS-GUI page and click on Diagnostics in the Navigation panel
 - Open the FieldServer Toolbox software and click the diagnose icon  of the desired device



The screenshot shows the 'Diagnostics' page with a 'Captures' tab selected. Under the 'Full Diagnostic' heading, there is a 'Set capture period (max 1200 secs):' input field with the value '300' and a green 'Start' button. Below this, the 'Serial Capture' section also has a 'Set capture period (max 1200 secs):' input field with the value '300' and a green 'Start' button. A navigation panel on the left lists 'FieldServer Demo' with sub-items: 'About', 'Setup', 'View', 'User Messages', and 'Diagnostics' (which is highlighted). At the bottom, there are buttons for 'Home', 'HELP (F1)', and 'Contact Us'.

- Go to Full Diagnostic and select the capture period.
- Click the Start button under the Full Diagnostic heading to start the capture.
 - When the capture period is finished, a Download button will appear next to the Start button



This screenshot shows the 'Full Diagnostic' section after the capture is complete. The 'Set capture period (max 1200 secs):' input field still shows '300'. Below it, a blue progress bar indicates '100% Complete'. At the bottom, there are two buttons: a green 'Start' button and a blue 'Download' button.

- Click Download for the capture to be downloaded to the local PC.
- Send the diagnostic zip file to technical support.

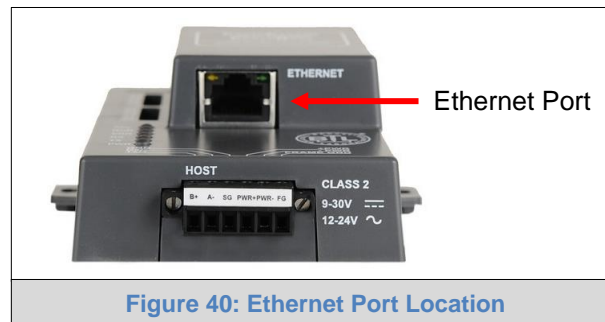
NOTE: Diagnostic captures of BACnet MS/TP communication are output in a “.PCAP” file extension which is compatible with Wireshark.


Appendix A.5.1. Taking a Capture with Older Firmware

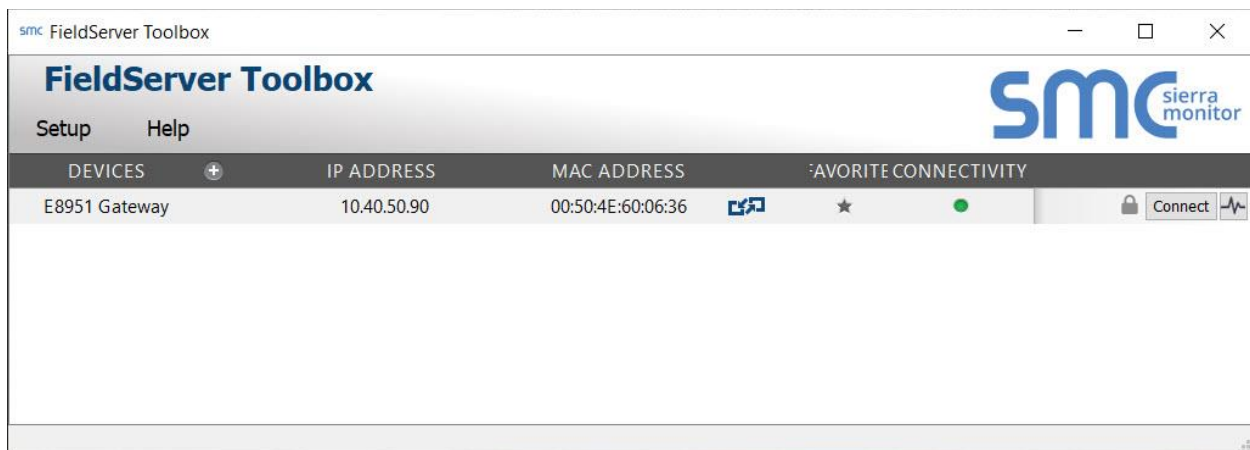
If the FieldServer firmware is from before November 2017, the Diagnostic Capture can be done by downloading the FieldServer Toolbox software but network connections (such as Ethernet and Wi-Fi) cannot be captured (if a network diagnostic is needed take a Wire Shark capture).

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

- Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the Sierra Monitor website's [Software Downloads](#).
- Extract the executable file and complete the installation.



- Connect a standard Cat-5 Ethernet cable between the PC and ProtoNode.
- Double click on the FS Toolbox Utility.
- **Step 1: Take a Log**
 - Click on the diagnose icon  for the desired device



- Select "Full Diagnostic" from the drop down menu



NOTE: If desired, the default capture period can be changed.

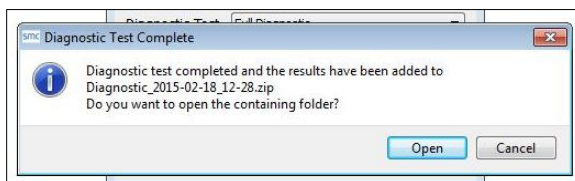
- Click on the Start Diagnostic button



- Wait for the capture period to finish and the Diagnostic Test Complete window will appear

- **Step 2: Send Log**

- Once the diagnostic test is complete, a .zip file is saved on the PC



- Choose "Open" to launch explorer and have it point directly at the correct folder
- Send the Diagnostic zip file to technical support



Appendix B. Additional Information

Appendix B.1. Update Firmware

To load a new version of the firmware, follow these instructions:

1. Extract and save the new file onto the local PC.
2. Open a web browser and type the IP Address of the FieldServer in the address bar.
 - o Default IP Address is 192.168.1.24
 - o Use the FS Toolbox utility if the IP Address is unknown ([Appendix A.1](#))
3. Click on the “Diagnostics & Debugging” button.
4. In the Navigation Tree on the left hand side, do the following:
 - a. Click on “Setup”
 - b. Click on “File Transfer”
 - c. Click on the “General” tab
5. In the General tab, click on “Choose Files” and select the web.img file extracted in step 1.
6. Click on the orange “Submit” button.
7. When the download is complete, click on the “System Restart” button.

Appendix B.2. BACnet: Setting Network_Number for More Than One ProtoNode on the Subnet

For both BACnet MS/TP and BACnet/IP, if more than one ProtoNode is connected to the same subnet, they must be assigned unique Network_Number values.

On the main Web Configuration screen, update the BACnet Network Number field and click submit. The default value is 50.

network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. <i>(1 - 65535)</i>	<input type="text" value="50"/>	<input type="button" value="Submit"/>
------------	---	---------------------------------	---------------------------------------

Figure 41: Web Configurator – Network Number Field

Appendix B.3. Internet Browser Software Support

The following web browsers are supported:

- Chrome Rev. 57 and higher
- Firefox Rev. 35 and higher
- Microsoft Edge Rev. 41 and higher
- Safari Rev. 3 and higher

NOTE: Internet Explorer is no longer supported as recommended by Microsoft.

NOTE: Computer and network firewalls must be opened for Port 80 to allow FieldServer GUI to function.

Appendix B.4. Change Web Server Security Settings After Initial Setup

NOTE: Any changes will require a FieldServer reboot to take effect.

- From the FS-GUI page, click Setup in the Navigation panel.

The screenshot displays the FS-GUI interface. On the left is a 'Navigation' panel with a tree view containing 'Test Bridge 1' (expanded), 'About', 'Setup', 'View', 'User Messages', and 'Diagnostics'. The main content area is titled 'Test Bridge 1' and has three tabs: 'Status' (selected), 'Settings', and 'Info Stats'. Below the tabs is a table with the following data:

Name	Value
Driver_Configuration	DCC000
DCC_Version	V6.05p (A)
Kernel_Version	V6.51c (B)
Release_Status	Normal
Build_Revision	4.43.6-45-gcd82a452bb
Build_Date	2019-11-28 14:05:21 +0200
Platform_Name	ProtoAir_2RS485_ARMv7
BIOS_Version	4.1.2
FieldServer_Model	FS-QS-2010-F
Serial_Number	1902300071VZL
Carrier_Type	-
Data_Points_Used	0
Data_Points_Max	250
Application Memory:	
Protocol_Engine_Memory_Used	0.31%
Memory_Used	440 kB
Memory_Available	141,433 kB
Memory_Free_Bytes	141,433 kB
Memory_Min_Free_Bytes	140,526 kB

At the bottom of the interface is a row of buttons: 'Home', 'HELP (F1)', 'Contact Us', 'System Restart', 'System Reboot', 'System Time Synch', 'Reset Cycle Times', and 'Logout'.

Figure 42: FS-GUI Landing Screen

Appendix B.4.1. Change Security Mode

- Click Security in the Navigation panel.

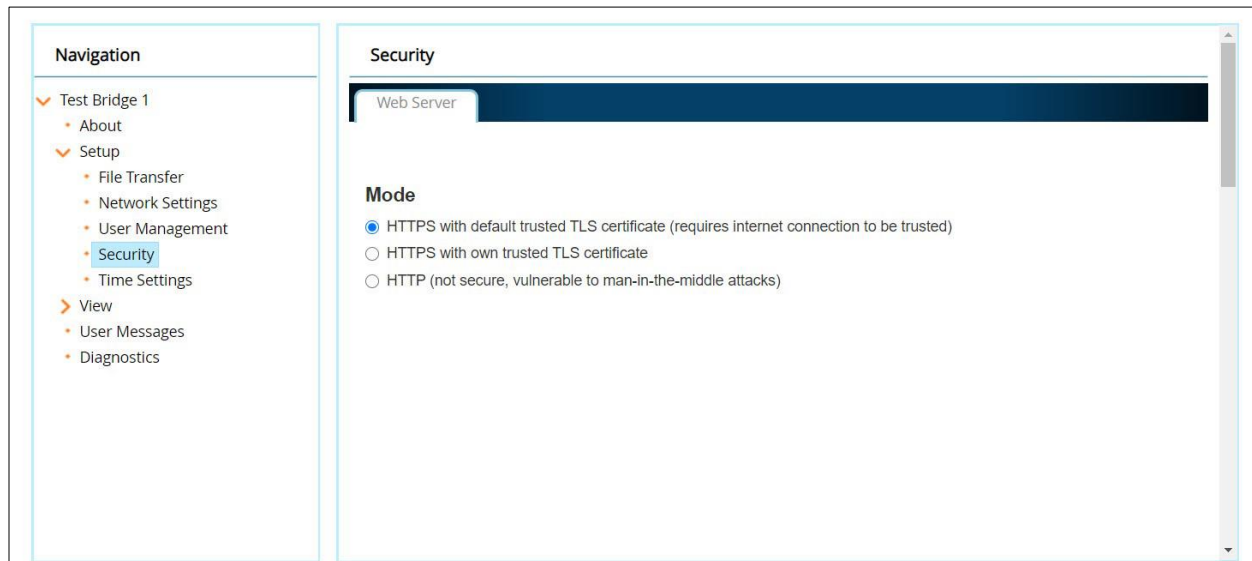


Figure 43: FS-GUI Security Setup

- Click the Mode desired.
 - If HTTPS with own trusted TLS certificate is selected, follow instructions in **Section 6.2.1**
- Click the Save button.

Appendix B.4.2. Edit the Certificate Loaded onto the FieldServer

NOTE: A loaded certificate will only be available if the security mode was previously setup as HTTPS with own trusted TLS certificate.

- Click Security in the Navigation panel.

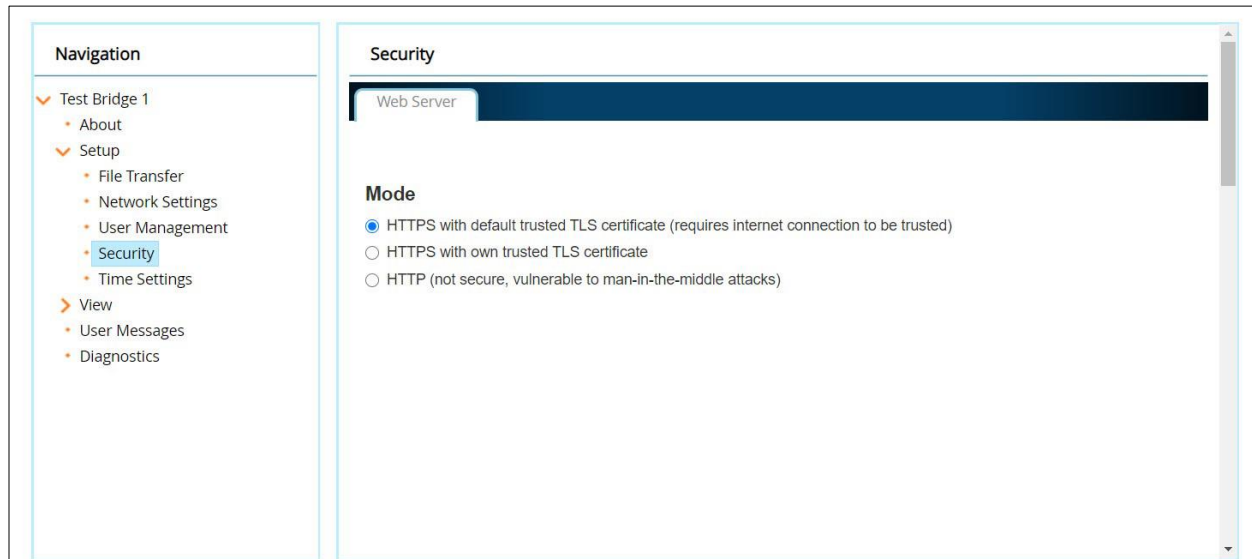


Figure 44: FS-GUI Security Setup – Certificate Loaded

- Click the Edit Certificate button to open the certificate and key fields.
- Edit the loaded certificate or key text as needed.
- Click Save.

Appendix B.5. Change User Management Settings

- From the FS-GUI page, click Setup in the Navigation panel.
- Click User Management in the navigation panel.

NOTE: If the passwords are lost, the unit can be reset to factory settings to reinstate the default unique password on the label. For ProtoNode, ProtoCessor or ProtoCarrier recovery instructions, see the [FieldServer Recovery Instructions document](#). For ProtoNode FPC-N54 or ProtoAir recovery instructions, see the [FieldServer Next Gen Recovery document](#). If the default unique password is lost, then the unit must be mailed back to the factory.

NOTE: Any changes will require a FieldServer reboot to take effect.

Appendix B.5.1. User Management

- Check that the Users tab is selected.

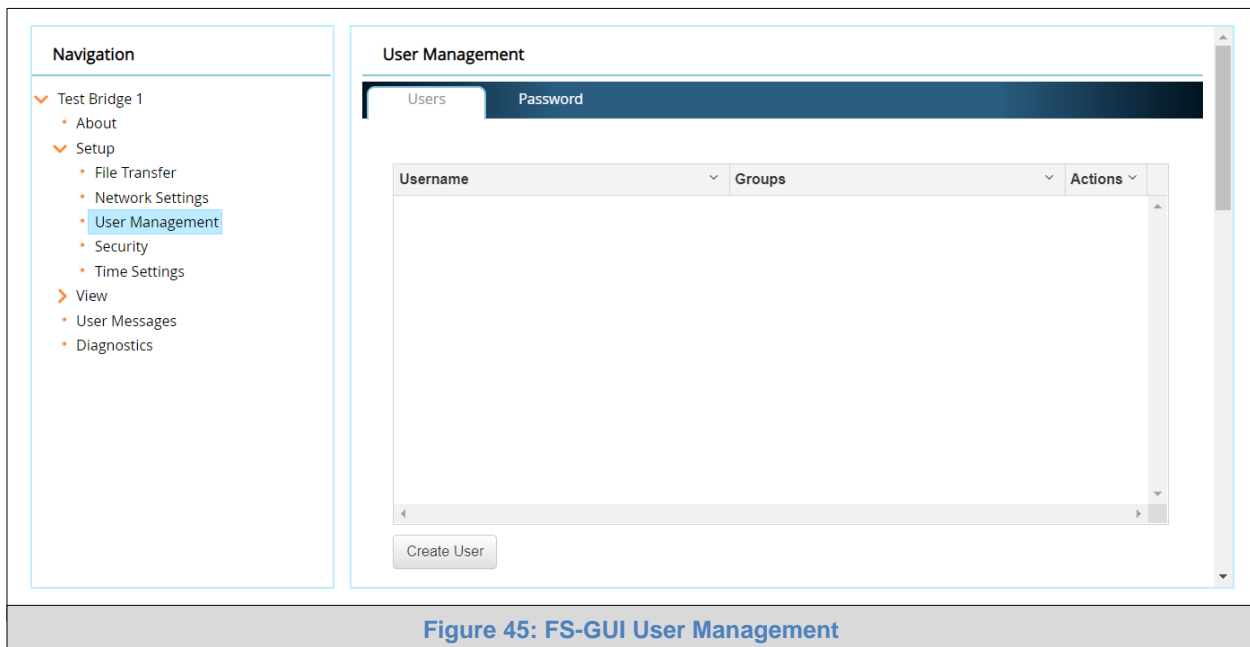


Figure 45: FS-GUI User Management

User Types:

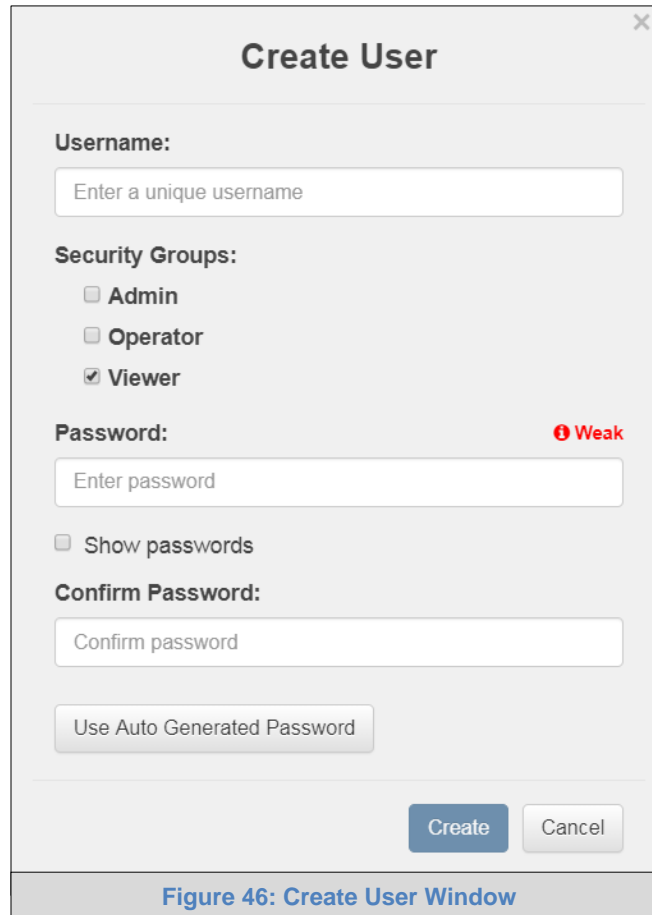
Admin – Can modify and view any settings on the FieldServer.

Operator – Can modify and view any data in the FieldServer array(s).

Viewer – Can only view settings/readings on the FieldServer.

Appendix B.5.1.1. Create Users

- Click the Create User button.

A screenshot of the 'Create User' dialog box. The window has a title bar with 'Create User' and a close button. It contains several sections: 'Username:' with a text field containing the placeholder 'Enter a unique username'; 'Security Groups:' with three checkboxes: 'Admin' (unchecked), 'Operator' (unchecked), and 'Viewer' (checked); 'Password:' with a text field containing the placeholder 'Enter password' and a red indicator 'Weak' to its right; a 'Show passwords' checkbox (unchecked); 'Confirm Password:' with a text field containing the placeholder 'Confirm password'; and a 'Use Auto Generated Password' button. At the bottom right are 'Create' and 'Cancel' buttons. Below the window is a caption: 'Figure 46: Create User Window'.

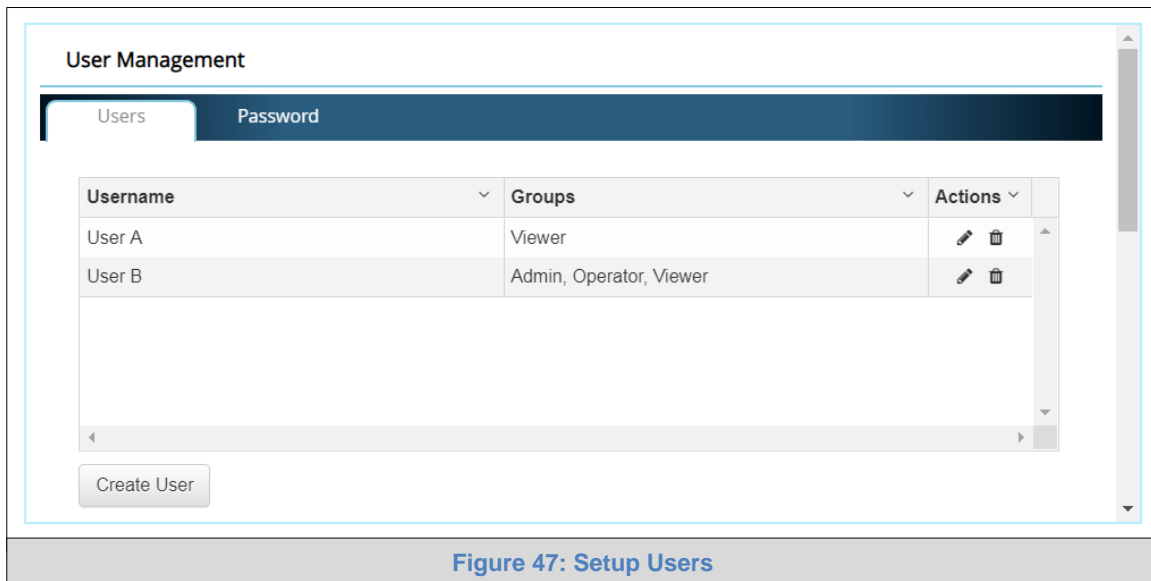
- Enter the new User fields: Name, Security Group and Password.
 - **User details are hashed and salted**

NOTE: The password must meet the minimum complexity requirements. An algorithm automatically checks the password entered and notes the level of strength on the top right of the Password text field.

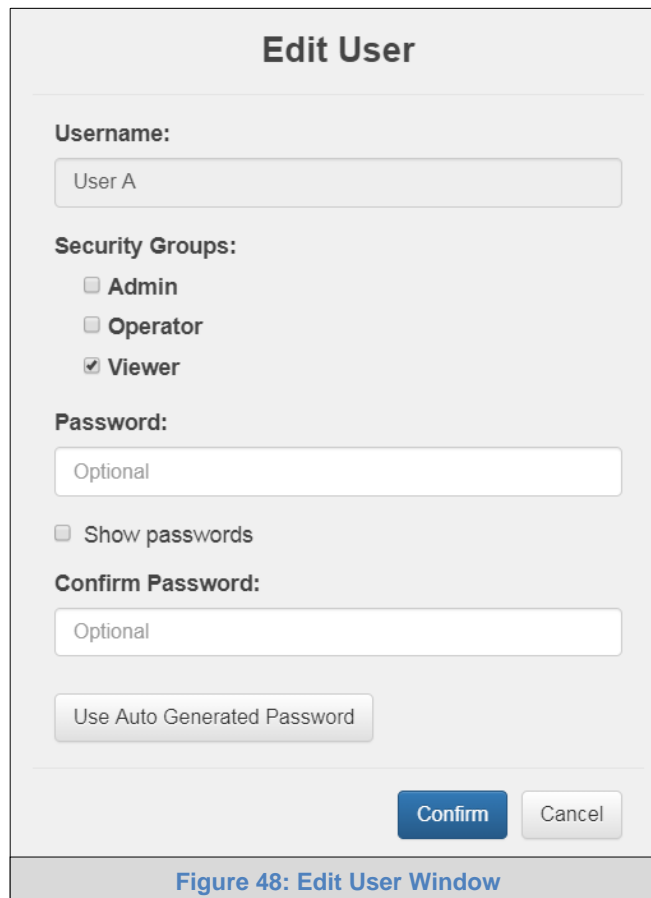
- Click the Create button.
- Once the Success message appears, click OK.

Appendix B.5.1.2. Edit Users

- Click the pencil icon next to the desired user to open the User Edit window.



- Once the User Edit window opens, change the User Security Group and Password as needed.



Edit User

Username:
User A

Security Groups:
☐ Admin
☐ Operator
☒ Viewer

Password:
Optional

☐ Show passwords

Confirm Password:
Optional

Use Auto Generated Password

Confirm Cancel

Figure 48: Edit User Window

- Click Confirm.
- Once the Success message appears, click OK.

Appendix B.5.1.3. Delete Users

- Click the trash can icon next to the desired user to delete the entry.

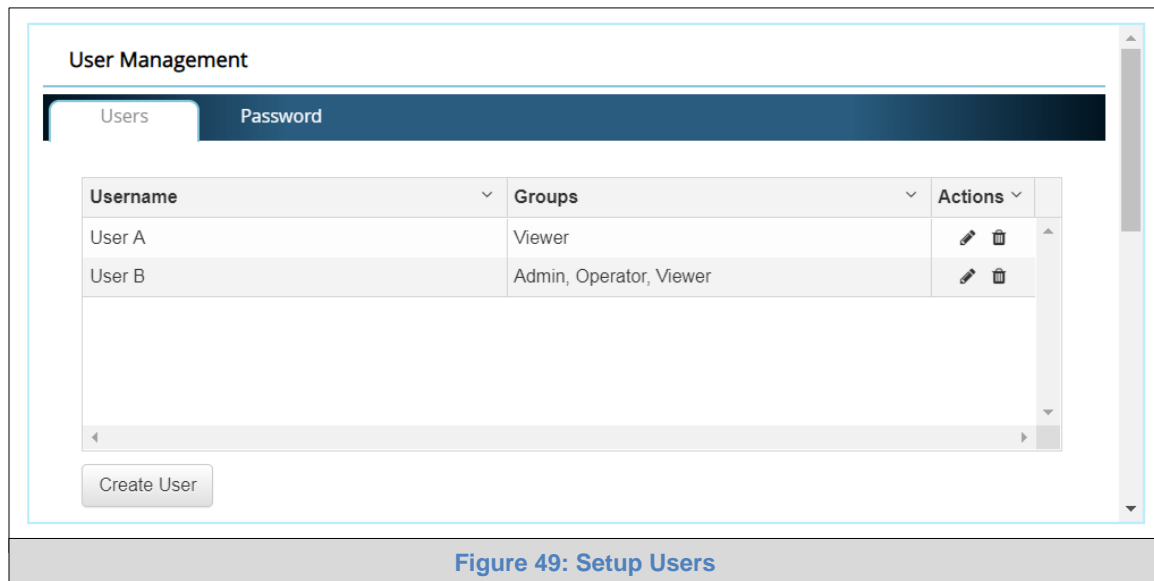


Figure 49: Setup Users

- When the warning message appears, click Confirm.

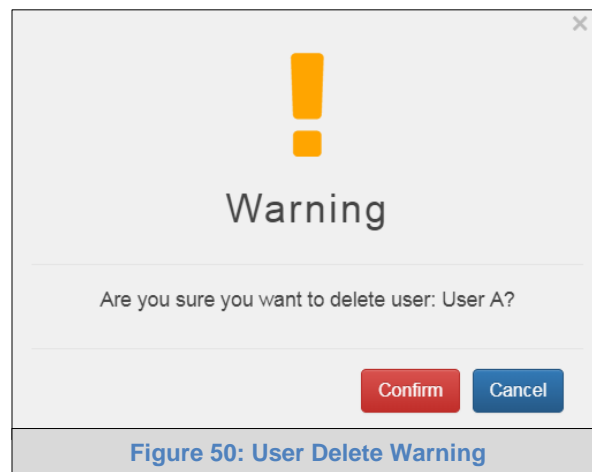
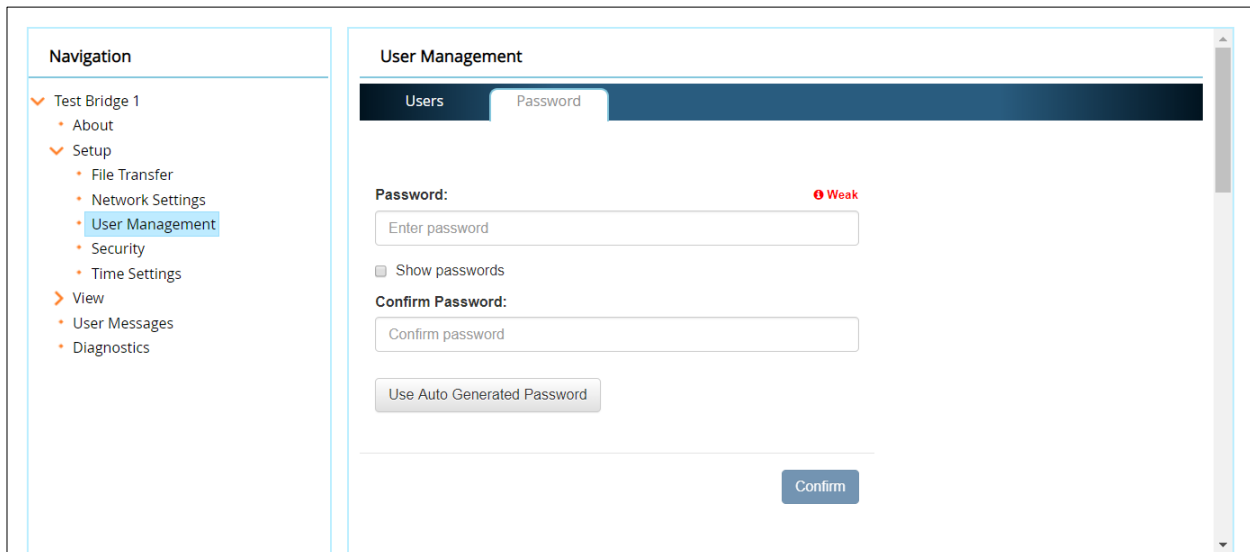


Figure 50: User Delete Warning

Appendix B.5.2. Change FieldServer Password

- Click the Password tab.



The screenshot displays the FieldServer GUI interface. On the left is a 'Navigation' sidebar with a tree structure: 'Test Bridge 1' (expanded), 'About', 'Setup' (expanded), 'File Transfer', 'Network Settings', 'User Management' (highlighted), 'Security', 'Time Settings', 'View' (expanded), 'User Messages', and 'Diagnostics'. The main content area is titled 'User Management' and contains two tabs: 'Users' and 'Password'. The 'Password' tab is active. It features a 'Password:' label with a red 'Weak' indicator to its right. Below this is a text input field containing the placeholder 'Enter password'. A checkbox labeled 'Show passwords' is positioned below the input field. Further down is a 'Confirm Password:' label followed by another text input field with the placeholder 'Confirm password'. A button labeled 'Use Auto Generated Password' is located below the confirm field. At the bottom right of the form is a 'Confirm' button.

Figure 51: FieldServer Password Update via FS-GUI

- Change the general login password for the FieldServer as needed.

NOTE: The password must meet the minimum complexity requirements. An algorithm automatically checks the password entered and notes the level of strength on the top right of the Password text field.

NOTE: If a gateway in the field is updated to a secure gateway, the password will change to "admin". This change will still occur if the gateway was already setup with a unique password that was loaded in the factory and printed on the label.⁷

Appendix C. Vendor Information – Weil-McLain

Find the “Weil-McLain Vendor Mappings” document at www.weil-mclain.com for the complete point list for all the devices referenced in this manual. Only the protocols listed as supported for this FieldServer are supported (see **Section 2.1**). Ignore all points referring to unsupported protocols when using this FieldServer.

Appendix D. “A” Bank DIP Switch Settings

Appendix D.1. “A” Bank DIP Switch Settings

Address	A0	A1	A2	A3	A4	A5	A6	A7
1	On	Off	Off	Off	Off	Off	Off	Off
2	Off	On	Off	Off	Off	Off	Off	Off
3	On	On	Off	Off	Off	Off	Off	Off
4	Off	Off	On	Off	Off	Off	Off	Off
5	On	Off	On	Off	Off	Off	Off	Off
6	Off	On	On	Off	Off	Off	Off	Off
7	On	On	On	Off	Off	Off	Off	Off
8	Off	Off	Off	On	Off	Off	Off	Off
9	On	Off	Off	On	Off	Off	Off	Off
10	Off	On	Off	On	Off	Off	Off	Off
11	On	On	Off	On	Off	Off	Off	Off
12	Off	Off	On	On	Off	Off	Off	Off
13	On	Off	On	On	Off	Off	Off	Off
14	Off	On	On	On	Off	Off	Off	Off
15	On	On	On	On	Off	Off	Off	Off
16	Off	Off	Off	Off	On	Off	Off	Off
17	On	Off	Off	Off	On	Off	Off	Off
18	Off	On	Off	Off	On	Off	Off	Off
19	On	On	Off	Off	On	Off	Off	Off
20	Off	Off	On	Off	On	Off	Off	Off
21	On	Off	On	Off	On	Off	Off	Off
22	Off	On	On	Off	On	Off	Off	Off
23	On	On	On	Off	On	Off	Off	Off
24	Off	Off	Off	On	On	Off	Off	Off
25	On	Off	Off	On	On	Off	Off	Off
26	Off	On	Off	On	On	Off	Off	Off
27	On	On	Off	On	On	Off	Off	Off
28	Off	Off	On	On	On	Off	Off	Off
29	On	Off	On	On	On	Off	Off	Off
30	Off	On	On	On	On	Off	Off	Off
31	On	On	On	On	On	Off	Off	Off
32	Off	Off	Off	Off	Off	On	Off	Off
33	On	Off	Off	Off	Off	On	Off	Off
34	Off	On	Off	Off	Off	On	Off	Off
35	On	On	Off	Off	Off	On	Off	Off
36	Off	Off	On	Off	Off	On	Off	Off
37	On	Off	On	Off	Off	On	Off	Off
38	Off	On	On	Off	Off	On	Off	Off
39	On	On	On	Off	Off	On	Off	Off
40	Off	Off	Off	On	Off	On	Off	Off
41	On	Off	Off	On	Off	On	Off	Off
42	Off	On	Off	On	Off	On	Off	Off
43	On	On	Off	On	Off	On	Off	Off
44	Off	Off	On	On	Off	On	Off	Off
45	On	Off	On	On	Off	On	Off	Off
46	Off	On	On	On	Off	On	Off	Off

Address	A0	A1	A2	A3	A4	A5	A6	A7
47	On	On	On	On	Off	On	Off	Off
48	Off	Off	Off	Off	On	On	Off	Off
49	On	Off	Off	Off	On	On	Off	Off
50	Off	On	Off	Off	On	On	Off	Off
51	On	On	Off	Off	On	On	Off	Off
52	Off	Off	On	Off	On	On	Off	Off
53	On	Off	On	Off	On	On	Off	Off
54	Off	On	On	Off	On	On	Off	Off
55	On	On	On	Off	On	On	Off	Off
56	Off	Off	Off	On	On	On	Off	Off
57	On	Off	Off	On	On	On	Off	Off
58	Off	On	Off	On	On	On	Off	Off
59	On	On	Off	On	On	On	Off	Off
60	Off	Off	On	On	On	On	Off	Off
61	On	Off	On	On	On	On	Off	Off
62	Off	On	On	On	On	On	Off	Off
63	On	On	On	On	On	On	Off	Off
64	Off	Off	Off	Off	Off	Off	On	Off
65	On	Off	Off	Off	Off	Off	On	Off
66	Off	On	Off	Off	Off	Off	On	Off
67	On	On	Off	Off	Off	Off	On	Off
68	Off	Off	On	Off	Off	Off	On	Off
69	On	Off	On	Off	Off	Off	On	Off
70	Off	On	On	Off	Off	Off	On	Off
71	On	On	On	Off	Off	Off	On	Off
72	Off	Off	Off	On	Off	Off	On	Off
73	On	Off	Off	On	Off	Off	On	Off
74	Off	On	Off	On	Off	Off	On	Off
75	On	On	Off	On	Off	Off	On	Off
76	Off	Off	On	On	Off	Off	On	Off
77	On	Off	On	On	Off	Off	On	Off
78	Off	On	On	On	Off	Off	On	Off
79	On	On	On	On	Off	Off	On	Off
80	Off	Off	Off	Off	On	Off	On	Off
81	On	Off	Off	Off	On	Off	On	Off
82	Off	On	Off	Off	On	Off	On	Off
83	On	On	Off	Off	On	Off	On	Off
84	Off	Off	On	Off	On	Off	On	Off
85	On	Off	On	Off	On	Off	On	Off
86	Off	On	On	Off	On	Off	On	Off
87	On	On	On	Off	On	Off	On	Off
88	Off	Off	Off	On	On	Off	On	Off
89	On	Off	Off	On	On	Off	On	Off
90	Off	On	Off	On	On	Off	On	Off
91	On	On	Off	On	On	Off	On	Off
92	Off	Off	On	On	On	Off	On	Off

Address	A0	A1	A2	A3	A4	A5	A6	A7
93	On	Off	On	On	On	Off	On	Off
94	Off	On	On	On	On	Off	On	Off
95	On	On	On	On	On	Off	On	Off
96	Off	Off	Off	Off	Off	On	On	Off
97	On	Off	Off	Off	Off	On	On	Off
98	Off	On	Off	Off	Off	On	On	Off
99	On	On	Off	Off	Off	On	On	Off
100	Off	Off	On	Off	Off	On	On	Off
101	On	Off	On	Off	Off	On	On	Off
102	Off	On	On	Off	Off	On	On	Off
103	On	On	On	Off	Off	On	On	Off
104	Off	Off	Off	On	Off	On	On	Off
105	On	Off	Off	On	Off	On	On	Off
106	Off	On	Off	On	Off	On	On	Off
107	On	On	Off	On	Off	On	On	Off
108	Off	Off	On	On	Off	On	On	Off
109	On	Off	On	On	Off	On	On	Off
110	Off	On	On	On	Off	On	On	Off
111	On	On	On	On	Off	On	On	Off
112	Off	Off	Off	Off	On	On	On	Off
113	On	Off	Off	Off	On	On	On	Off
114	Off	On	Off	Off	On	On	On	Off
115	On	On	Off	Off	On	On	On	Off
116	Off	Off	On	Off	On	On	On	Off
117	On	Off	On	Off	On	On	On	Off
118	Off	On	On	Off	On	On	On	Off
119	On	On	On	Off	On	On	On	Off
120	Off	Off	Off	On	On	On	On	Off
121	On	Off	Off	On	On	On	On	Off
122	Off	On	Off	On	On	On	On	Off
123	On	On	Off	On	On	On	On	Off
124	Off	Off	On	On	On	On	On	Off
125	On	Off	On	On	On	On	On	Off
126	Off	On	On	On	On	On	On	Off
127	On	On	On	On	On	On	On	Off
128	Off	Off	Off	Off	Off	Off	Off	On
129	On	Off	Off	Off	Off	Off	Off	On
130	Off	On	Off	Off	Off	Off	Off	On
131	On	On	Off	Off	Off	Off	Off	On
132	Off	Off	On	Off	Off	Off	Off	On
133	On	Off	On	Off	Off	Off	Off	On
134	Off	On	On	Off	Off	Off	Off	On
135	On	On	On	Off	Off	Off	Off	On
136	Off	Off	Off	On	Off	Off	Off	On
137	On	Off	Off	On	Off	Off	Off	On
138	Off	On	Off	On	Off	Off	Off	On
139	On	On	Off	On	Off	Off	Off	On
140	Off	Off	On	On	Off	Off	Off	On
141	On	Off	On	On	Off	Off	Off	On
142	Off	On	On	On	Off	Off	Off	On

Address	A0	A1	A2	A3	A4	A5	A6	A7
143	On	On	On	On	Off	Off	Off	On
144	Off	Off	Off	Off	On	Off	Off	On
145	On	Off	Off	Off	On	Off	Off	On
146	Off	On	Off	Off	On	Off	Off	On
147	On	On	Off	Off	On	Off	Off	On
148	Off	Off	On	Off	On	Off	Off	On
149	On	Off	On	Off	On	Off	Off	On
150	Off	On	On	Off	On	Off	Off	On
151	On	On	On	Off	On	Off	Off	On
152	Off	Off	Off	On	On	Off	Off	On
153	On	Off	Off	On	On	Off	Off	On
154	Off	On	Off	On	On	Off	Off	On
155	On	On	Off	On	On	Off	Off	On
156	Off	Off	On	On	On	Off	Off	On
157	On	Off	On	On	On	Off	Off	On
158	Off	On	On	On	On	Off	Off	On
159	On	On	On	On	On	Off	Off	On
160	Off	Off	Off	Off	Off	On	Off	On
161	On	Off	Off	Off	Off	On	Off	On
162	Off	On	Off	Off	Off	On	Off	On
163	On	On	Off	Off	Off	On	Off	On
164	Off	Off	On	Off	Off	On	Off	On
165	On	Off	On	Off	Off	On	Off	On
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167	On	On	On	Off	Off	On	Off	On
168	Off	Off	Off	On	Off	On	Off	On
169	On	Off	Off	On	Off	On	Off	On
170	Off	On	Off	On	Off	On	Off	On
171	On	On	Off	On	Off	On	Off	On
172	Off	Off	On	On	Off	On	Off	On
173	On	Off	On	On	Off	On	Off	On
174	Off	On	On	On	Off	On	Off	On
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176	Off	Off	Off	Off	On	On	Off	On
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189	On	Off	On	On	On	On	Off	On
190	Off	On	On	On	On	On	Off	On
191	On	On	On	On	On	On	Off	On
192	Off	Off	Off	Off	Off	Off	On	On

Address	A0	A1	A2	A3	A4	A5	A6	A7
193	On	Off	Off	Off	Off	Off	On	On
194	Off	On	Off	Off	Off	Off	On	On
195	On	On	Off	Off	Off	Off	On	On
196	Off	Off	On	Off	Off	Off	On	On
197	On	Off	On	Off	Off	Off	On	On
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202	Off	On	Off	On	Off	Off	On	On
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207	On	On	On	On	Off	Off	On	On
208	Off	Off	Off	Off	On	Off	On	On
209	On	Off	Off	Off	On	Off	On	On
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211	On	On	Off	Off	On	Off	On	On
212	Off	Off	On	Off	On	Off	On	On
213	On	Off	On	Off	On	Off	On	On
214	Off	On	On	Off	On	Off	On	On
215	On	On	On	Off	On	Off	On	On
216	Off	Off	Off	On	On	Off	On	On
217	On	Off	Off	On	On	Off	On	On
218	Off	On	Off	On	On	Off	On	On
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238	Off	On	On	On	Off	On	On	On
239	On	On	On	On	Off	On	On	On
240	Off	Off	Off	Off	On	On	On	On
241	On	Off	Off	Off	On	On	On	On
242	Off	On	Off	Off	On	On	On	On

Address	A0	A1	A2	A3	A4	A5	A6	A7
243	On	On	Off	Off	On	On	On	On
244	Off	Off	On	Off	On	On	On	On
245	On	Off	On	Off	On	On	On	On
246	Off	On	On	Off	On	On	On	On
247	On	On	On	Off	On	On	On	On
248	Off	Off	Off	On	On	On	On	On
249	On	Off	Off	On	On	On	On	On
250	Off	On	Off	On	On	On	On	On
251	On	On	Off	On	On	On	On	On
252	Off	Off	On	On	On	On	On	On
253	On	Off	On	On	On	On	On	On
254	Off	On	On	On	On	On	On	On
255	On	On	On	On	On	On	On	On

Appendix E. Reference

Appendix E.1. Specifications



	ProtoNode FPC-N34	ProtoNode FPC-N35
Electrical Connections	One 6-pin Phoenix connector with: RS-485 port (+ / - / gnd) Power port (+ / - / Frame-gnd) One 3-pin Phoenix connector with RS-485 port (+ / - / gnd) One Ethernet 10/100 BaseT port	One 6-pin Phoenix connector with: RS-485 port (+ / - / gnd) Power port (+ / - / Frame-gnd) One 2-pin Phoenix connector with: One FTT-10 LonWorks port One Ethernet 10/100 BaseT port
Approvals	CE certified; UL 916 approved; WEEE compliant; REACH compliant; EN 50491-3 and CSA C22-2 standards; FCC Class A Part 15; DNP 3.0 conformance tested; RoHS 3 compliant; CSA 205 approved	
	BTL Marked	LonMark Certified
Power Requirements	9-30VDC or 12-24VAC	
Physical Dimensions	11.5 cm L x 8.3 cm W x 4.1 cm H (4.5 x 3.2 x 1.6 in.)	
Weight	0.2 kg (0.4 lbs)	
Operating Temperature	-40°C to 75°C (-40°F to 167°F)	
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT	
Humidity	5-90% RH (non-condensing)	
(Specifications subject to change without notice)		
Figure 52: Specifications		

Appendix E.1.1. Compliance with UL Regulations

For UL compliance, the following instructions must be met when operating ProtoNode.

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
 - Comply with local electrical code
 - Be suited to the expected operating temperature range
 - Meet the current and voltage rating for ProtoNode
- Furthermore, the interconnecting power cable shall:
 - Be of length not exceeding 3.05m (118.3")
 - Be constructed of materials rated VW-1, FT-1 or better
- If the unit is to be installed in an operating environment with a temperature above 65 °C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.

Appendix F. Limited 2 Year Warranty

MSA Safety warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. MSA Safety will repair or replace any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by MSA Safety personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without MSA Safety's approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables or to any damage resulting from battery leakage.

In all cases MSA Safety's responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above, MSA Safety disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of MSA Safety for damages including, but not limited to, consequential damages arising out of or in connection with the use or performance of the product.